FY 2003 EVALUATION OF THE FAA RUNWAY SAFETY PROGRAM

NAS Configuration Management and Evaluation Staff
Program Evaluation Branch (ACM-10)

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EXECUTIVE SUMMARY

Runway Safety is an element of the United States Department of Transportation (DOT) Performance Goal to reduce the commercial and general aviation fatal accident rate. In addition, decreasing the risk of runway incursions is an objective under the safety goal in the new *FAA Flight Plan 2004-2008*. The Federal Aviation Administration's (FAA) Office of Runway Safety (ARI) has a *2002-2004 Runway Safety Blueprint* and Runway Safety Order 7050.1 that shape its activities. ARI has also included periodic external evaluations to assess the effectiveness of its organization and program. The National Airspace System Configuration Management and Evaluation Staff's Program Evaluation Branch (ACM-10) was asked to conduct the 2003 evaluations for ARI. This evaluation built upon the 2002 evaluation performed by ACM-10 which assessed the effectiveness of the FAA's internal mechanisms designed to accomplish its runway safety goals.

Runway safety has been a high priority at the FAA since the early 1990's and was enhanced with the creation of the ARI organization in 1999. Many initiatives at both the national and regional level have been completed, and others are still ongoing. When the FAA established the current runway safety office, representatives from various lines of business (LOB) were detailed to ARI to represent their respective organizations. At the regional level, a Regional Runway Safety Program Manager (RRSPM) was appointed in each region, and representatives from the major lines of business dealing with runway safety were assigned to support the RRSPM.

The primary objective of the 2003 Runway Safety Evaluation was to determine the extent to which primary runway safety stakeholders at the facility and district office levels coordinate with their counterparts in other LOBs to reduce the risks of runway incursions. The secondary objective was to collect industry perceptions of the FAA's Runway Safety Program to identify observed successes and areas of concern. Because of a September 30, 2003 deadline for report submission, data collection was limited to May-August 2003.

Data collection was accomplished via interviews and a web-based questionnaire. The evaluation team interviewed 132 runway safety stakeholders and received 161 responses to its questionnaire that was distributed to 472 managers. The evaluation team interviewed six external aviation organizations as a representation of the primary aircraft and airport operators who deal with runway safety on a daily basis. The analysis included looking at trends within and among LOBs and among external stakeholders. This information was the source of the findings and recommendations below.

Findings and Recommendations

Data analysis resulted in four major findings:

Finding #1: Most managers believed runway safety has been integrated into their staff's primary work functions.

Finding #2: Coordination across LOBs has been occurring at the facility level. However, there is room for improvement.

Finding #3: Visibility and increased awareness were identified as the primary strengths of the FAA Runway Safety Program while communications among LOBs and the understanding of regional issues and initiatives were the most common issues of concern.

Finding #4: Problems with communications, complacency, and human factors were identified as the top contributory factors to runway incursions.

Finding #1

Overall, facility managers believe that runway safety is incorporated into the primary work of their staffs, but work encompassing runway safety differs by LOB, and in some cases, by facility.

- Interviewees and questionnaire respondents indicated an overall familiarity among management with the 2002 Runway Safety Order 7050.1 and their respective Regional Runway Safety Plan. The *2002-2004 Runway Safety Blueprint* is seen more as an external communications document
- Facility managers cited many regular activities that incorporate runway safety, although frequency of these activities varies—in Air Traffic, runway safety is integral to everything a tower controller does, while activities in other LOBs are more varied
- For some managers, Runway Safety was a specific element of their performance plan; however, most employees have runway safety as an implicit goal, not a specific element of their work plan
- The majority of managers believed that runway safety is incorporated into training for their staff members. In Air Traffic, there are nine courses at the FAA Academy that contain elements that address runway safety; for other LOBs, runway safety was woven into other training, but not specifically singled out

Recommendations:

1. ARI should determine minimum runway safety training requirements that need to be addressed for each applicable LOB.

2. ARI should work with LOBs to see that their current training covers the minimum requirements for runway safety instruction.
3. ARI should pursue a change to the Federal Aviation Regulations (FAR) that will mandate that runway safety be part of pilot certification and inspection processes.

Finding #2

Overall, managers are satisfied with the frequency of interaction with their counterparts from other LOBs, but managers would like to see improvements in the quality of the interactions. Many of these interactions are event driven, while others are more proactive.

- A vast majority of respondents agreed that coordination was necessary and occurring with people within their own LOB as well as with other LOBs and the local airport authority
- A vast majority of respondents indicated that situations where they request help from or provide help to other LOBs occur most often on a quarterly basis
- At times, requests for help from another LOB cannot be fulfilled due to lack of resources
- Among questionnaire respondents, 78% indicated that Runway Safety Action Team (RSAT) meetings at the airport level are their primary cross-organizational forum to address the reduction of runway incursion risk
- There is a consistent feeling that collaboration is required among LOBs to mitigate pilot deviations (PDs); however for operational errors (OEs) and vehicle/pedestrian deviations (V/PDs), there is more variation in the perception of the need to work together
- The levels of satisfaction with assistance provided by other LOBs varied

Recommendations:

1. Air Traffic should investigate ways to allow private pilots to visit control towers and interact with Air Traffic Control Tower (ATCT) controllers.
2. Air Traffic should work with local airport authorities to expand opportunities for ATCT controllers to participate in airfield surface tours.
3. The RRSPMs should analyze their records to see which LOBs have not been able to fully participate in runway safety initiatives to quantify the increase in resources that would be necessary to increase LOB interaction.
4. ARI needs to develop a process for making more runway incursion narrative data available to facilities so that they may use the data as lessons learned to improve their participation in runway safety initiatives—better data on incursions can help managers see the connections between their activities and those of other LOBs.

5. ARI should work with the FAA Administrator to insure LOB leadership at both national and regional headquarters support objectives of the FAA Runway Safety Program.

Finding #3

Many strengths and issues of concern with both the National Runway Safety Program and the Regional Runway Safety Programs were identified.

- At the national level, ARI is seen as successful in raising runway safety awareness
- Most external stakeholders said ARI has strong leadership
- Many managers expressed concern that the FAA Runway Safety Program does not take advantage of regional runway safety initiatives
- External stakeholders noted that obtaining additional support and improved commitment to runway safety among the LOBs could enhance the FAA Runway Safety Program (e.g., some stakeholders hear about runway safety primarily from ARI and not the other FAA organizations that they deal with on a regular basis)

Recommendation:

1. ARI and the RRSPMs should review, evaluate, and prioritize the areas of concern and revisit current plans and work activities to identify opportunities for addressing these areas.

Finding #4

Problems with communication between controllers and pilots or ground vehicle operators, complacency, and human factors were the top three contributory factors as perceived by primary runway safety stakeholders. Additionally, interviewees identified a lack of situational awareness and distractions in the tower cab or cockpit as contributory factors to runway incursions.

- Air Traffic most often identified complacency, distractions, problems with communication, and airport unfamiliarity on the part of the pilot or vehicle operator as contributory factors
- Managers within the Airports organization identified two main contributory factors: a lack of pilot training/education and human factors
- Flight Standards most often cited problems with communications between controllers and pilots. In addition, Flight Standards mentioned problems with airport complexity, human factors, and airport signage and markings
- External stakeholders identified many of the same contributory factors, including communication errors, complacency, and airport complexity

Recommendation:

1. ARI should look at runway incursion narratives to determine if they correlate with the perceptions of contributory factors.

Summary

In summary, the data collection for the evaluation, which took place over a five-month period, provided insight into the incorporation of runway safety into regular work and interaction among LOBs. Data analysis suggested that controllers, inspectors, engineers, and technicians take runway safety seriously, whether it is "spelled out" or not. Different organizations involved with runway safety do interact to complete and enhance runway safety initiatives.

In assessing the extent of runway safety "horizontal integration" at the facility/district office level, the findings indicate that:

- The majority of Runway Safety Program participants and stakeholders are beginning to demonstrate a runway safety "mindset" in their daily activities
- Interaction between lines of business at the facility/district office level is occurring, but the primary catalysts for this interaction result from either the occurrence of runway incursions or forums initiated by the Office of Runway Safety and regional counterparts
- Managers are generally satisfied with what they and their staff are doing regarding runway safety—this satisfaction could prove to be an obstacle to making further progress if ARI believes that there are still significant improvements to be made regarding the reduction of runway incursion risk

The challenge for the FAA is to go beyond the current state of runway safety and achieve a situation where managers, controllers, and inspectors proactively work together, with minimal facilitation from ARI, to reduce incursion risk.

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INTRODUCTION

BACKGROUND

A. Background of the Evaluation

Increasing runway safety is one of the FAA Administrator's top priorities and part of a United States Department of Transportation (DOT) performance goal. Specifically, the DOT goal states "by 2007, reduce the commercial aviation fatal accident rate per 100,000 departures by 80 percent, from a three-year average baseline (1994-1996)." The goal also instructs the FAA to "reduce general aviation fatal accidents." The *FAA Flight Plan 2004-2008*, just released on September 29, 2003, contains four goals, one of which is to achieve the lowest possible accident rate and constantly improve safety. One of the objectives under this goal is to decrease the risk of runway incursions. This evaluation report, being submitted to DOT through ARI, meets the Government Performance and Results Act (GPRA) requirement for an annual assessment of an Air Traffic Services (ATS) program.

This evaluation builds upon an earlier study performed by the National Airspace System (NAS) Configuration Management and Evaluation Staff, Program Evaluation Branch (ACM-10) entitled "Evaluation of the FAA Runway Safety Program," report #2002-20, dated September 30, 2002. The objective of the 2002 evaluation was to assess the effectiveness of the FAA's internal mechanisms designed to accomplish its runway safety goals. ACM-10 was subsequently asked to conduct an independent evaluation of the Runway Safety activities in 2003.

B. Background of the Runway Safety Program Organization

Since 1990, the FAA has initiated a series of action plans and initiatives to address the problem of runway incursions. Action plans were written and updated in 1991, 1995, and 1998. On June 30, 1999, the FAA released Runway Safety Program Order 7210.58 to formalize the roles and responsibilities of participants in this program. Throughout the 1990's, more than 261 initiatives were established. In 1999, the Administrator decided the Agency's runway safety activities needed to be redirected and escalated to foster an Agency-wide approach, with a higher profile, more resources, greater reach, and executive commitment and oversight. At that time, the Administrator appointed a Director of Runway Safety to serve as the focal point for all runway safety activities across the Agency. In September 1999, the current Office of Runway Safety was established

within the ATS organization under a program charter and mission statement. Shortly thereafter, representatives from several organizations within the FAA were assembled to form the Integrated Team for Runway Safety. Eventually, teams were formed with representatives from both government and industry to provide recommendations for increased runway safety and development of implementation plans.

The first *National Blueprint* was developed and issued in October 2000 to provide a guide for the Runway Safety Program to achieve a measurably safer runway environment. An updated version, entitled *The 2002-2004 Runway Safety Blueprint*, dated July 2002, was issued in the summer of 2002. It defines the Runway Safety Program's strategy and prioritizes the program's efforts to reduce runway incursions. To reflect the current program, the Runway Safety Order was re-written (Order 7050.1 superseded 7210.58), and took effect on November 1, 2002.

The following section lays out the objectives, constraints, scope, and methodology, followed by the findings and recommendations resulting from ACM-10's evaluation.

OBJECTIVES

The primary objective of the 2003 Runway Safety Evaluation was to determine the extent to which principal runway safety stakeholders at the facility/district office level coordinate with their counterparts in other lines of business (LOB) to reduce the risk of runway incursions. ARI referred to this inter-LOB coordination as "horizontal integration." A secondary objective of this evaluation was to collect industry perceptions of the FAA's Runway Safety Program to identify observed successes and areas of concern. The evaluation team also collected runway safety stakeholders' opinions of the major contributory factors to runway incursions.

CONSTRAINTS

The ARI and ATS organizations intend to submit this 2003 Runway Safety Program Evaluation to DOT in response to the GPRA requirement for the annual assessment of Agency programs. The submission deadline for 2003 GPRA assessments is September 30, 2003. While the evaluation team was able to obtain data and feedback from relevant managers at the National Headquarters and all nine FAA regions, this deadline required the team to limit on-site interviews and data collection to five of the nine regions.

Given the time constraints and necessary union review and approval processes, the evaluation team did not request interviews with controllers or inspectors for this evaluation. The team focused its interviews specifically on facility managers for input on runway safety issues.

SCOPE

The ACM-10 evaluation team recognized that many organizations throughout the FAA play a part in addressing runway safety and reducing the risk of runway incursions. However, based on the initial guidance received from ATS-1 and ARI-1, the team focused its data gathering and analysis efforts on the FAA organizations that have the greatest influence on the reduction of runway incursion risk at the field/facility level. These organizations included Air Traffic (AAT), Flight Standards (AFS), and Airports (ARP). The team also solicited input from Regional Administrators, Airway Facilities (AAF), and NAS Implementation (ANI); however, the bulk of our data came from AAT, AFS, and ARP.

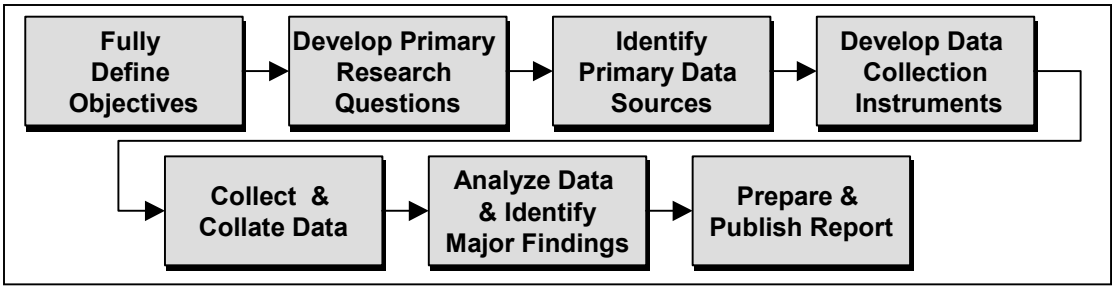
While this evaluation focused on Runway Safety Program implementation at the facility/district office level, the evaluation team made a point to solicit input from key managers at the national and regional headquarters (HQ) level to obtain a comprehensive picture of the Runway Safety Program's horizontal integration throughout the Agency. For the objective concerning external stakeholder perceptions of the FAA's Runway Safety Program, the evaluation team limited its questionnaire to major industry associations that represent the primary aircraft and airport operators who deal with runway safety on a daily basis. These organizations were:

- Air Line Pilots Association (ALPA)
- Air Transport Association (ATA)
- Aircraft Owners and Pilots Association (AOPA)
- American Association of Airport Executives (AAAE)
- National Association of Flight Instructors (NAFI)
- Regional Airline Association (RAA)

METHODOLOGY

The ACM-10 organization employed its standard evaluation methodology to conduct the 2003 Runway Safety Evaluation. This process is illustrated in Figure 1.

Figure 1 - Evaluation Methodology



A. Research Topics

For the primary evaluation objective concerning horizontal integration, ACM-10 had the director of ARI provide his vision for successful horizontal integration of runway safety initiatives at the facility level. Primary characteristics of strong horizontal integration would include:

- Familiarity with the FAA's overall runway safety objectives and the key documents that describe the program and its implementation plans
- Integration of a "runway safety mindset" into the primary work activities of facility/district office managers and their staff
- Incorporation of specific training on the reduction of runway incursion risk in the formal training curricula that the lines of business develop and implement
- Proactive coordination between Air Traffic Control Tower (ATCT) Managers, Flight Standards Inspectors, Airports Inspectors, and other organizations to seek out and mitigate potential runway incursion risks

The evaluation team used these characteristics of horizontal integration to develop research questions to provide structure for our data collection instruments.

For the secondary objective, the evaluation team focused on FAA Runway Safety Program successes and issues of concern observed by external stakeholders as they relate to communication, outreach, and impact.

To address the investigational area of runway incursion contributory factor perceptions, the evaluation team identified general categories pertaining to operational errors (OE), pilot deviations, (PD) and vehicle/pedestrian deviations (V/PD). The team also included a question in the interviews and on the questionnaire to gauge whether runway safety participants at the facility/district office level believe that data collected during incursion investigations is sufficient to determine the major contributory factors.

B. Research Questions

After agreement was reached with ATS-1 and ARI-1 on the evaluation objectives, ACM-10 developed the following research questions to structure data collection activities:

- Horizontal Integration
    - Are facility/district office managers familiar with Runway Safety Program objectives, guidance documentation, and current plans?
    - Is Runway Safety integrated into the primary work activities of facility/district office managers and their staff?
    - Is there specific training on the reduction of runway incursion risks in the formal training curricula the LOBs implement?
    - Do Air Traffic, Flight Standards, and Airports managers and their staffs actively coordinate with each other to mitigate runway incursion risks?

- Perceptions of Runway Safety Program Successes and Issues of Concern
    - What do internal and external stakeholders identify as the primary successes of the FAA Runway Safety Program?
    - What do internal and external stakeholders identify as the primary areas of concern regarding the FAA Runway Safety Program?

- Perceptions of Contributory Factors
    - What are the expert opinions of runway safety stakeholders regarding the primary factors that contribute to runway incursions?
    - Is the data currently collected during the investigation of runway incursions sufficient to identify major contributory factors?

C. Data Sources and Data Collection Instruments

Data was collected from interviews with managers within the AAT, ARP, and AFS organizations. In addition, some AAF and ANI Division Managers were interviewed, depending on their level of involvement with the Runway

Safety Program. The data was collected during the months of May through August 2003.

Since the first objective of the evaluation related to activities at the facility/district office level, the evaluation team collected data primarily at the regional and field levels. At National Headquarters, the evaluation team interviewed representatives from the primary organizations of interest (i.e. AAT, ARP, and AFS). The evaluation team collected data from all FAA regions through a combination of on-site visits for face-to-face interviews, telephone interviews, and a web-based questionnaire. Figure 2 illustrates the data sources, participants, and data collection methods employed in the evaluation.

Figure 2 - Runway Safety Evaluation Data Collection Approach

Level	Participants	Interviews	Web-based Questionnaire
HQ	Key Managers	X	
Regions Not Visited	RRSPM	X	
Regions Visited	RA	X	
	RRSPM	X	
	Division Managers	X	
	RSPM	X	
	Managers of Part 139 Inspectors	X	X
Facility/District Office	Air Traffic Control Tower Managers	X	X
	Flight Standards District Office Managers	X	X
	Certificate Management Office Managers	X	X
	International Field Office Managers	X	X
	Airport District Office Managers	X	X
External Stakeholders	Industry Association Representatives (ALPA, ATA, AOPA, AAAE, NAFI, RAA)	X	

Five of nine regions were selected for on-site data collection because of the limited time frame for the evaluation. These regions (Central, Eastern, Northwest Mountain, Southwest, and Western Pacific) were selected for on-site visits based on at least one of the following factors:

- Regions with both high and low totals of runway incursions over the past year
- Regions not previously visited
- Regional geographical representation

In these five regions, the evaluation team spoke with Regional Administrators and/or Regional Executive Managers, Regional Runway Safety Program Managers (RRSPMs), the Regional Safety Program Managers (RSPM) from AFS, division managers from at least ATS, ARP, AFS, and in some cases with

AAF, and ANI. In addition to these visits, the evaluation team gathered input via teleconference from the remaining four regional RRSPMs.

At the field level, the team met with ATCT managers, Flight Standards managers—Flight Standards District Office (FSDO) managers, Certificate Management Office (CMO) managers, and International Field Office (IFO) managers—and Airport District Office (ADO) managers. Facilities were chosen based on their proximity to the regional office, given our need to maximize benefits for data collection. A total of 132 individuals were interviewed for this analysis, with 4 from headquarters, 56 from the regional offices, and 72 from facilities. The chart in Appendix A shows a more detailed breakdown of organizations represented in the data collection. The web-based questionnaire was sent to 473 people. The response rate overall was 34% (161 people). The response rate for particular LOBs was as follows:

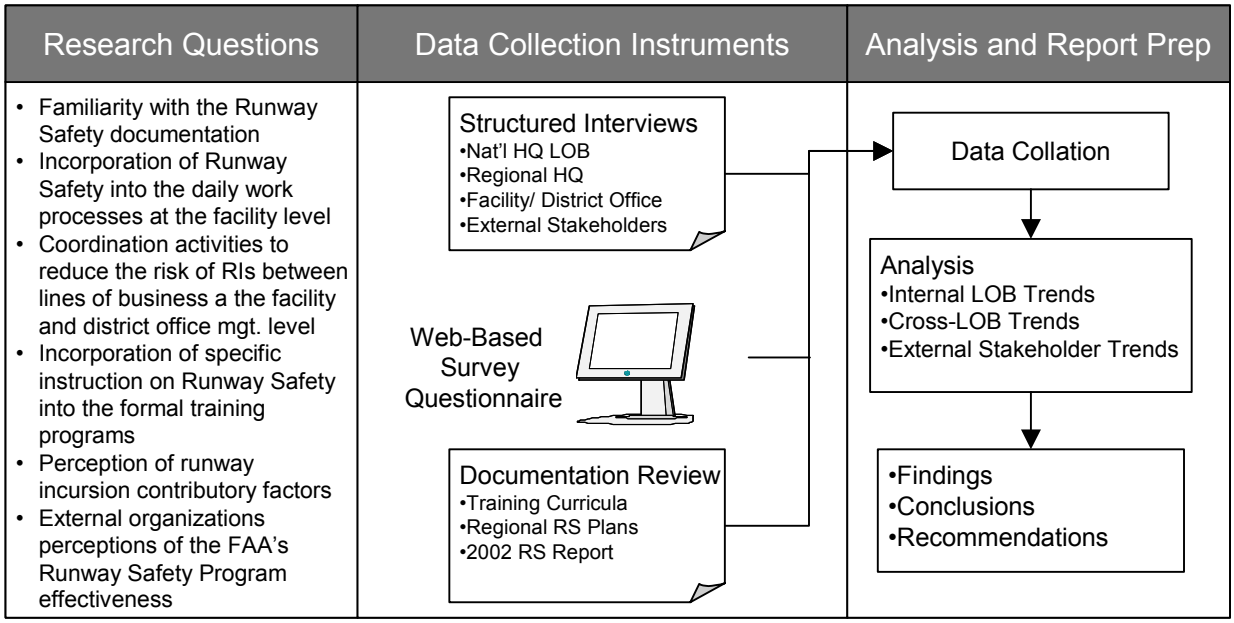
- Air Traffic with 32% (113 people out of 352)
- Airports with 69% (18 people of 26)
- Flight Standards with 32% (30 people of 95)

The second objective of the evaluation related to collecting industry perceptions of the FAA's Runway Safety Program to identify observed successes and areas of concern. The evaluation team performed face-to-face interviews for most stakeholders and a telephone interview for one organization.

D. Data Analysis

The evaluation team used a multi-step process (illustrated in Figure 3) to analyze the data collected, using the research questions to structure the analysis. The team began by collating interview responses for each research topic by LOB to identify trends specific to each organization. We then compared the aggregate trends from each LOB to identify Agency-wide trends. The team also reviewed external stakeholder responses, identified themes, and included the results in the characterization of Runway Safety Program successes and areas of concern.

Figure 3 - Runway Safety Data Analysis Methodology



For the web-based questionnaire, the team consolidated the response data using statistical analysis software to calculate response frequencies for each question in the questionnaire. The team also performed a cross-tabulation analysis to map responses to primary respondent groups (i.e., Air Traffic Managers, Flight Standards Managers, Airports Managers). Once the analysis of questionnaire results was complete, the team correlated the results with the interview trends identified to finalize themes and develop major findings. A more detailed collection of questionnaire results can be found in Appendix B. Once the team finalized the major findings of the evaluation, corresponding recommendations were developed.

FINDINGS

This section contains the major findings of the evaluation organized by objective (i.e., horizontal integration, perceptions of success and issues of concern, runway incursion contributory factors). These findings contain the crosscutting trends and themes of our evaluation data. A detailed analysis of data results is contained in the appendices of this report.

Finding #1

Most managers believed runway safety has been integrated into their staff's primary work functions.

OVERVIEW

Multiple factors were explored in order to understand the level of integration of runway safety into the primary work processes within the LOBs. First, we determined the degree to which managers were aware of the primary Runway Safety Program documents and guidance. Second, we discussed the extent to which runway safety was incorporated into primary work processes. Third, we asked interviewees and questionnaire respondents whether runway safety was incorporated into the work plans of people in their LOB. Last, we explored whether personnel received training to allow them to participate in runway safety initiatives.

A. Familiarity With Program and Guidance Documents

The team evaluated the level to which managers at the regional and field level were familiar with the three primary runway safety documents: (1) the Runway Safety Order 7050.1, (2) the *2002-2004 Runway Safety Blueprint,* and (3) the Regional Runway Safety Plan within each respondent's respective region. Interview and questionnaire responses indicated an overall familiarity among management with the 2002 Runway Safety Order 7050.1 and the respective Regional Runway Safety Plan. The evaluation team found that the *2002-2004 Runway Safety Blueprint* is seen more as an external communications document; thus, people in the field were not intimately aware of this document.

The Runway Safety Order 7050.1 established procedures and assigned responsibilities for the FAA's Runway Safety Program. The majority of division and facility managers across the LOBs indicated they have

received a copy of the Runway Safety Order 7050.1. Managers received this Order through various channels including the regional administrator, the RRSPM, the division manager, mail, and/or the Internet.

The *2002-2004 Runway Safety Blueprint* has been used to define and prioritize coordinated efforts to further reduce runway incursion risks between the FAA and the aviation community. Most of the Air Traffic and Flight Standards Division managers we spoke with had seen the *2002-2004 Runway Safety Blueprint* but in some cases were not familiar with its contents. The majority of Airports Division Managers we spoke with were not familiar with the *2002-2004 Runway Safety Blueprint*. At the facility level, most managers were not familiar with the contents of the *2002-2004 Runway Safety Blueprint*.

Regional Runway Safety Plans are created annually by each RRSPM to outline the region's approach and goals regarding runway safety. In most cases, we found that the RRSPM would solicit input from division managers when developing the Regional Runway Safety Plan and obtain their approval prior to dissemination. The majority of division managers from all LOBs indicated that they were familiar with their Regional Runway Safety Plan. We also found that most facility managers within the LOBs were familiar with their respective Regional Runway Safety Plan.

B. Incorporation of Runway Safety Into Primary Work

Facility managers cited that many runway safety activities have been incorporated into their routine processes of conducting business. The incorporation varied in the actual activities conducted by AAT, in comparison to those of ARP, AFS, AAF, and ANI. The following paragraphs describe both the types and frequency of these activities.

Almost all AAT interviewees felt that runway safety was an integral part of what they do on a daily basis. Similarly, every AAT management survey respondent believed runway safety is part of everything a tower controller does when in the tower cab. Regarding frequency of incorporation of runway safety, 63% of Air Traffic managers responded either that runway safety is integral to all their activities or occurs daily.

For the ARP organization interviewees, runway safety was seen as something that was integral to their work while they are performing inspections/conducting surveillance, which may or may not be a daily activity. A majority of the managers within the ARP organization (67%)

responded that airfield checks were the activity that incorporated runway safety the most. Regarding frequency, most survey respondents (67%) within the ARP organization also believed runway safety was integral to their inspectors' and engineers' work or was incorporated into daily work.

For AFS interviewees, runway safety was also seen as something that was integral to their work while they were performing inspections/conducting surveillance. Likewise, almost all (97%) of the respondents felt that runway safety seminars were the primary activities where their staff members consistently addressed runway safety. Within AFS, frequency of incorporation was a bit lower, with a little more than one third responding that runway safety was integral and one third saying it was incorporated weekly.

Interviewees from AAF and ANI stated that whenever their technicians were on the airfield, they were observing runway safety procedures. Secondly, technicians notified the proper individual if they observed situations on the airfield that could lead to a runway incursion. The frequency with which a technician specifically addressed runway safety was dependent upon the proximity of the technician's specific assignments to active runways.

During interviews, it was noted that the incorporation of runway safety into daily work activities was not a new concept. These interviewees stated that runway safety responsibilities had always been part of their job, and wondered why there was suddenly such interest in this topic.

C. Work Plans

Another area explored was whether or not runway safety was explicitly contained in work plans. Many division managers at the regional headquarters level have runway safety included in their work plans. A vast majority (78.7%) of questionnaire respondents said that runway safety was incorporated into their staffs' individual work plans.

The majority of Air Traffic respondents said runway safety was included in their individual work plans. Several managers noted that runway safety was part of the tower controller position descriptions.

Within Flight Standards, runway safety was typically in the RSPMs' and the Safety Program Managers' (SPMs) work plans. We found that both Airports and Flight Standards had similar responses concerning the incorporation of runway safety into their individual work plans.

Questionnaire data showed that nearly three-quarters of both Airports and Flight Standards respondents believed that runway safety was incorporated in their individual work plans. However, an important distinction came out in the interview process, which could clarify what the respondents meant by incorporation of runway safety into their work plans. These clarifications included the following:

- Inspectors usually have a particular number of inspections they must conduct during the year specified in their work plans, and the inspections include runway safety elements, therefore, inspector work plans incorporate runway safety
- Runway safety is included in Regional Division Plans, Agency goals etc. which facilities support. For example, in one region, many interviewees told us they support runway safety because it is a part of the Safer Skies agenda
- Runway safety is in many division managers' work plans, and the facilities support their division manager—therefore, runway safety is an implied requirement for staff working in those facilities
- In one region, runway safety is considered an element of Systems Safety activities they are already performing

At the facility level, observations indicated that although many inspectors do not have the words "runway safety" specifically called out as a separate element, most feel they are performing tasks that could reduce runway incursion risks.

D. Training

The majority of managers believed that runway safety is incorporated in initial and recurrent training for their staff. Interviewees reported that even though their training does not always address runway safety as a separate item, it is effective enough to reduce the risk of runway incursions. Runway safety was incorporated into general safety courses at the FAA Academy. These courses often discuss the importance of proper phraseology during radio communications, signage, and markings on the airport surface, and surface movement.

At the FAA Academy, tower controllers complete nine training courses that contain elements of runway safety. These courses were designed to teach controllers runway incursion avoidance through surface movement techniques and crew resource management. Additionally, managers believed runway safety to be an integral part of all training tower controllers initially receive at the FAA Academy because it is a controller's responsibility to ensure the safe movement of aircraft on the airport

surface. Appendix C includes additional information regarding the FAA Academy courses that address runway safety.

Almost all Air Traffic managers indicated that runway safety was part of recurrent training for their personnel. According to interviewees, recurrent training was usually presented in the form of computer-based instruction, CD-ROMs, videos, or discussions at various meetings. Air Traffic managers identified a variety of sources for recurrent training courses and materials that cover runway safety, including: ARI, RRSPMs, ATX, and local tower controllers. Interviewees report that recurrent training occurs monthly, quarterly, or annually depending on the facility.

Airport inspectors also undergo initial training at the FAA Academy. Various courses in the curriculum touched on runway safety issues; however, there were no separate courses that specifically addressed runway safety and the reduction of runway incursion risks. The courses focused on airport lighting, markings, airport compliance standards and the Airport Improvement Program (AIP) guidelines. AIP also discussed the standardization of signage, airport marking, and lighting on the airport surface. Most Airports division managers indicated that recurrent training included aspects of runway safety. This recurrent training was usually presented to inspectors through CD-ROM and/or classroom courses. The RRSPM, national headquarters personnel (ARI and ARP), and local Airports division staff developed specific runway safety training materials that were made available to Airports' inspectors for recurrent training.

Initial training for Flight Standards inspectors did not specifically address runway safety. Aspects of runway safety were touched on in many regulatory standards courses. In some regions, initial training included having inspectors look for the use of taxi diagrams in the cockpit and proper phraseology during communications with air traffic controllers. However, managers pointed out that such items were not required elements of pilot inspections. The majority of Flight Standards managers interviewed believed that runway safety was incorporated into the recurrent training for their staff. Recurrent training for Flight Standards inspectors usually occurs annually or biannually and may include classroom training, simulator training, cockpit/crew resource management training, and video training. Usually the RRSPM or national headquarters provided these training materials.

SUMMARY

Runway safety is part of the regular workload for most people in the three LOBs. In ATCTs, runway safety is an element of what they do every day controlling traffic on the airport surface. However, in other LOBs, when inspectors go out and perform inspections, runway safety and incursion risks are addressed; however, these inspections do not necessarily occur on a daily basis. The fact that runway safety is not explicitly called out in work plans does not appear to be a significant impediment to incorporation of runway safety tenets.

RECOMMENDATIONS

1. ARI should determine minimum runway safety training requirements that need to be addressed for each applicable LOB.
2. ARI should work with LOBs to see that their current training covers the minimum requirements for runway safety instruction.
3. ARI should pursue a change to the Federal Aviation Regulations (FAR) that will mandate that runway safety be part of pilot certification and inspection processes.

Finding #2

Coordination across LOBs has been occurring at the facility level. However, there is room for improvement.

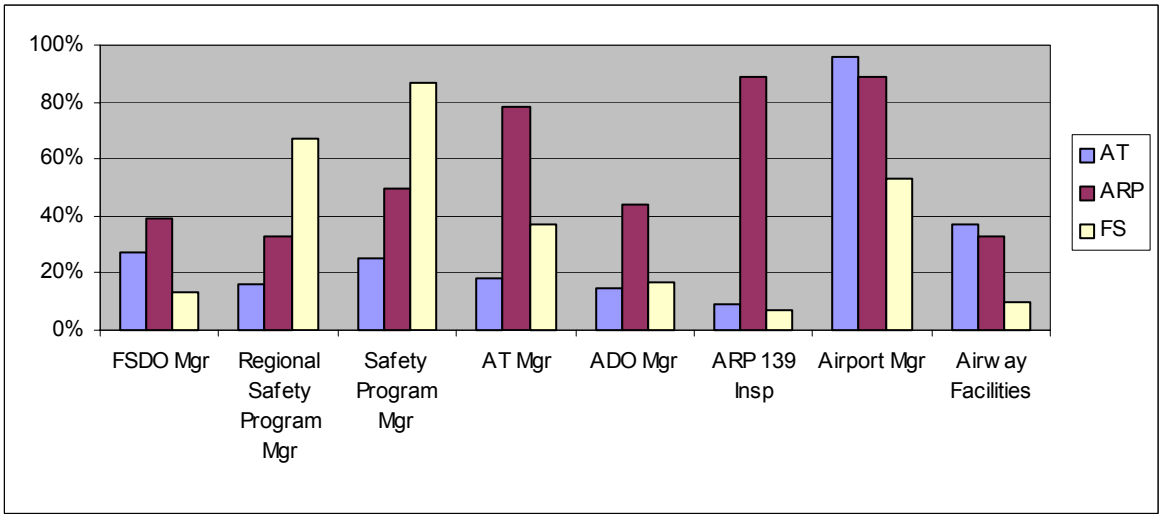
OVERVIEW

The main objective of this evaluation was to look at the extent to which managers at the facility level actively coordinate with their counterparts in other LOBs to reduce the risk of runway incursions. This interaction is referred to as "horizontal integration" by ARI. Both interview and questionnaire results indicated that LOBs do believe that they need to interact with other LOBs to reduce the risk of runway incursions. Overall, people were satisfied with the frequency of interaction but would like to see improvements in the quality of the interactions. Many activities were event driven, while others were deemed more proactive. The Runway Safety Action Team (RSAT) meetings were named as the main forum for interaction by 79% of questionnaire respondents. The amount of interaction also varied depending on the type of runway incursion activity being addressing. Most people agreed that improvements needed to be made in the interactions.

A. Interaction is Necessary and Occurring

To begin, the team ascertained that interaction was needed among LOBs. During interviews, attendees were asked if it was necessary to interact with other LOBs to reduce the risk of runway incursions. A majority (89%) agreed that coordination was necessary. In the questionnaire, managers were asked to identify the organizations and individuals with whom they need to coordinate to improve runway safety. As Figure 4 shows, managers from the Air Traffic and Airports Organizations named the local airport authority as the organization they most frequently coordinate with to address runway safety. Flight Standards managers named the SPM and the RSPM within their LOB as first and second, and their third most frequent contact was with the local airport authority.

Figure 4 - Who Interactions are Occurring With

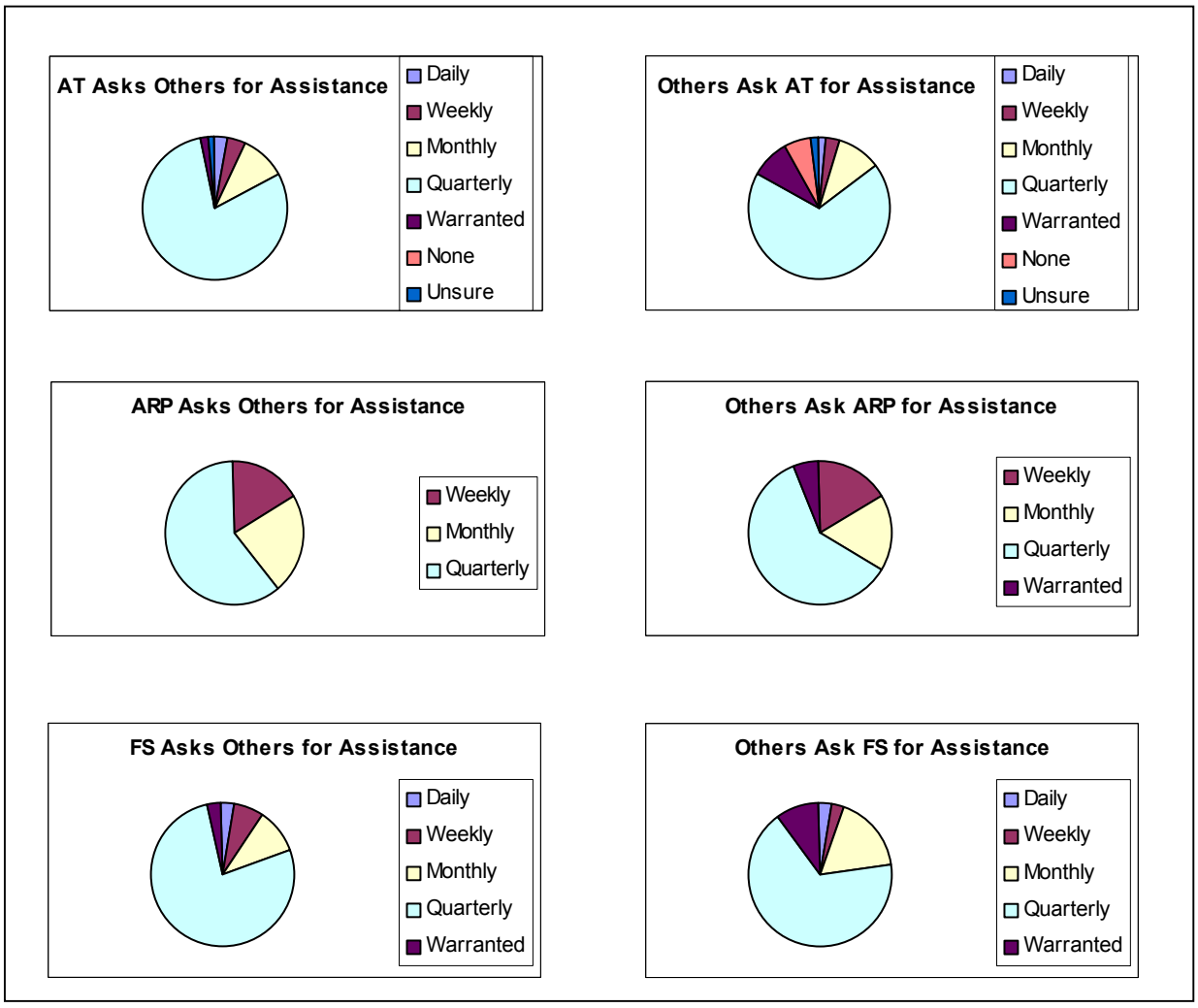


B. Frequency

Overall, respondents indicated that the frequency of interaction among LOBs was adequate. Comments on the types of interaction were more varied. The team collected data on the frequency with which LOBs assisted each other to decrease the risk of runway incursions. We also looked at the ability of these organizations to support runaway safety activities when requested by other LOBs. Finally, we looked at the perception of the usefulness of this support.

Most LOBs ask others for assistance on a quarterly basis. Monthly requests for assistance were the next most popular category among all three LOBs (as shown in Figure 5). LOBs also indicated that others were mostly likely to ask them for assistance on a quarterly basis. Monthly was the second most frequent response. (More detailed information can be found in Appendix B.)

Figure 5 – Frequency of Assistance Requests



C. Ability to Support Interaction between LOBs

Respondents were asked about their ability to provide time and resources in response to requests for assistance from other LOBs. Less than half (44%) of the Air Traffic respondents stated that they had the resources to honor requests to provide assistance. While ARP and AFS stated that 50% and 60% of the time, respectively, they could provide help. This could have a significant impact on the types, quality, and timeliness of runway safety initiatives.

D. Type of Interaction

During interviews, we heard that interactions occurred in several ways based upon responses at the facility level.

- Addressing a potential problem
- Attending safety meetings and seminars
- Contacting the tower whenever on the airfield
- Coordinating airport surface closures for repairs
- Investigating runway incursions
- Organizing and conducting familiarization trips (controllers on the airport surface or pilots visiting the tower)
- Participating in RSAT meetings
- Reviewing airport design and layout initiatives
- Soliciting expertise in a particular area/topic, as needed

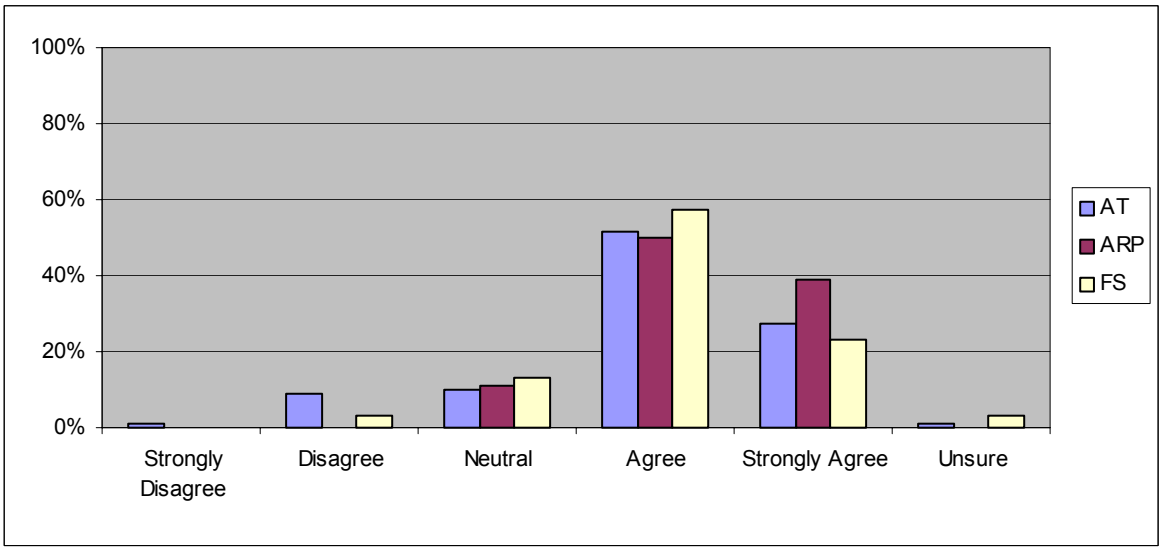
For example, one FSDO manager was reviewing a tape for a legal action and noticed that the controller on the tape was very soft-spoken and difficult to understand. Even though the legal action was not related to runway safety, this manager contacted the tower manager to let him know that so it could be addressed and decrease the chance of an incident.

The questionnaire respondents identified the following mechanisms of communication at the facility level that involved cross-LOB coordination.

- Attending informally scheduled meetings
- Participating in weekly teleconferences
- Developing and reviewing maintenance plans
- Participating in regular Regional Management Team meetings
- Participating in RRSPM-organized meetings
- Participating in RSAT meetings

As Figure 6 illustrates, a high percentage of questionnaire respondents in all three primary LOBs showed agreement or strong agreement that "RSAT meetings at the airport level are the primary cross-organizational forums to address the reduction of runway incursion risk." Within Air Traffic, 78% of the respondents said it was the primary forum, while 89% of Airports respondents and 80% of Flight Standards respondents made the same point. In contrast, only 21% of interviewees named RSAT meetings as a means of interacting.

Figure 6 – RSAT Meeting as Primary Forum for Cross-LOB Interaction



There was no consistency among regions with respect to the reliance on RSAT meetings for interfacing with other LOBs. The identification of RSAT meetings as the primary means of coordination between LOBs leads to two possible conclusions:

- The LOBs are reactive and need the RRSPM and the RSAT to be catalysts for bringing LOBs together
- The RSAT meetings are so productive that they served all needs for interaction

For managers in regions who state that they interact with other LOBs to address runway safety in forums other than RSAT meetings, one could conclude that:

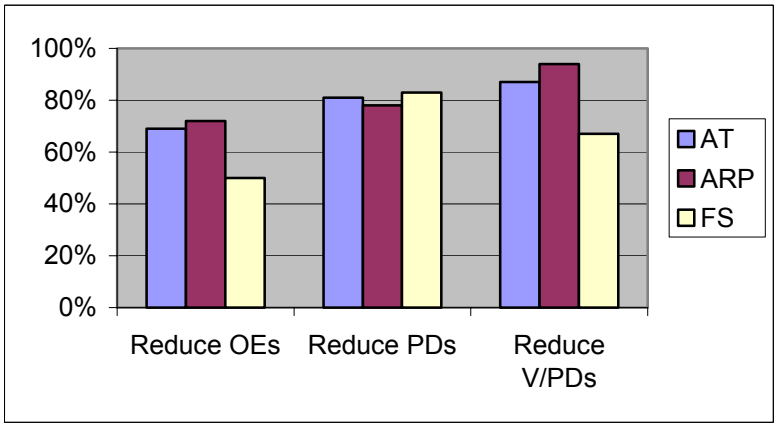
- Stakeholders in these regions are more proactive and do not wait for the RRSPM or RSAT to initiate inter-LOB coordination
- The RSAT meetings are not offering enough interaction to accomplish all the runway safety tasks. Therefore, people need to use other avenues to get their coordination accomplished

E. Interaction Based on Type of Incursion

The questionnaire asked what types of incursions caused the LOBs to work together with others to address runway safety. The three types of incursions are categorized into operational errors, pilot deviations, and vehicle/pedestrian deviations. The responses differed slightly among LOBs, but overall, the results showed that there was a consistent feeling among the LOBs that PDs required them to work together. (See Figure 7

below.) For OEs and V/PDs, there were more variations in perception on the need to work together. For both OEs and V/PDs, AAT and ARP responses were fairly similar, while fewer AFS respondents felt interaction was necessary.

Figure 7 – Incursion Types Requiring Interaction



F. Satisfaction with Interaction

Survey respondents indicated varying degrees of usefulness of support from the LOBs in reducing runway incursion risks. All LOBs indicated room for improvement of cross LOB interactions. The responses showed that support from AAT was considered helpful in over half the interactions with both ARP and AFS. Indications were that the support ATS receives from ARP was helpful at least half of the time. However, the support AFS received from ARP was only helpful a little more than one-third of the time. Lastly, both AAT and ARP indicated that support from AFS was helpful less than half of the time. (Figure 8 shows the results with the "Don't Know" and "Not Applicable" responses excluded.)

Figure 8 – Satisfaction with Support from Counterpart Organizations

	…support from Air Traffic			…support from Airports			…support from Flight Standards		
	SA/A	N	D/SD	SA/A	N	D/SD	SA/A	N	D/SD
Air Traffic receiving…				50%	29%	17%	46%	32%	17%
Airports receiving…	50%	22%	22%				44%	28%	17%
Flight Standards receiving…	53%	27%	17%	37%	40%	17%			

SA = Strongly Agree A = Agree N = Neutral D = Disagree SD = Strongly Disagree

Comparison of questionnaire and interview results regarding the level of interaction with other FAA organizations showed a greater interest on the part of interviewees for coordination improvement as compared to the questionnaire participants. Questionnaire results showed that at least 50% of respondents in ATS and AFS believed improvements could be made, while less than 25% of ARP respondents noted a need to improve interaction. However, a large percentage of interviewees (74%) believed overall interactions could be improved. In contrast, 15% of the interviewees thought interaction was "as good as it could get."

The most frequently mentioned suggestions by those interviewed are listed below. A complete list of suggestions received can be found in Appendix D.

- Increased participation from a particular LOB
- More emphasis within the LOB management from the top down – many see upper level managers telling their employees to support the runway safety activities, but the walk is not following the talk
- Need to "break down the wall" between pilots and controllers – some suggested that pilots are reluctant to request additional/progressive instructions from the tower for fear of aggravating the controller
- Sharing of data between LOBs needs to be increased – interviewees expressed frustration that there is a lot of runway incursion data, but they never see it

SUMMARY

According to our respondents, horizontal integration was viewed as necessary and evident. A vast majority of respondents indicated that the average frequency for requesting and providing help to other LOBs was on a quarterly basis. There were many types of interactions noted, the most prominent type of interaction noted by approximately three-quarters of the questionnaire respondents with other LOBs are through RSATs. Other interactions occurred during Regional Management Team meetings and following an incident. The need for interaction was seen as slightly different depending on the type of runway incursion being analyzed. A vast majority of interviewees thought improvements could be made in the interaction.

RECOMMENDATIONS

1. Air Traffic should investigate ways to allow private pilots to visit control towers and interact with ATCT controllers.

2. Air Traffic should work with local airport authorities to expand opportunities for ATCT controllers to participate in airfield surface tours.
3. The RRSPMs should analyze their records to see which LOBs have not been able to fully participate in runway safety initiatives to quantify the increase in resources that would be necessary to increase LOB interaction.
4. ARI needs to develop a process for making more runway incursion narrative data available to facilities so they may use the data as lessons learned to improve their participation in runway safety initiatives—better data on incursions can help managers see the connections between their activities and those of other LOBs.
5. ARI should work with the FAA Administrator to insure LOB leadership at both national and regional headquarters supports the objectives of the FAA Runway Safety Program.

Finding #3

Visibility and increased awareness were identified as the primary strengths of the FAA Runway Safety Program while communications among LOBs and the understanding of regional issues and initiatives were the most common issues of greatest concerns.

OVERVIEW

Both interviewees and questionnaire respondents were asked what they saw as the strengths and issues with the Runway Safety Program at both the national and regional levels. External stakeholders were also asked this question.

A. Strengths of the FAA Runway Safety Program

Interviewees were asked to identify the strengths of the FAA Runway Safety Program. Over one third of personnel interviewed perceived the heightened visibility and awareness of the "runway safety" topic as a success of the national Runway Safety Program. The strength of the program at the regional level that respondents most often identified was the establishment of Regional Runway Safety Teams. Interviewees also acknowledged the usefulness of educational material developed as a result of the FAA Runway Safety Program. A complete listing of the perceived strengths of the FAA Runway Safety Program is available in Appendix E.

Within ATS, the two main strengths of the FAA Runway Safety Program identified were the heightened visibility of runway safety and the approaches taken by the Regional Runway Safety Team. Interviewees believed communication facilitated by RSATs and other regional runway safety initiatives were also strengths of the program. Interviewees believed educational materials created by the FAA Runway Safety Program were useful.

ARP respondents also identified the heightened visibility of runway safety as the strongest attribute of the FAA Runway Safety Program. The majority of managers in the Airports organization viewed their Regional Runway Safety Team as a primary strength of the runway safety program. Regional Runway Safety Teams helped to augment communications among the LOBs at the regional and facility levels and reminded stakeholders to place emphasis on runway safety.

According to AFS managers interviewed, the heightened visibility of runway safety issues was the greatest strength identified in the national Runway Safety Program. One quarter of interviewees believed the educational materials produced by the FAA Runway Safety Program were useful in promoting the message of runway safety. Finally, nearly half of interviewees from AFS recognized the activities of the Regional Runway Safety Program as a strength in promoting runway safety within their region.

External stakeholder organizations interviewed most frequently identified the leadership within ARI as a strength of the FAA Runway Safety Program. Specifically, ARI was praised for their commitment to runway safety and their willingness to help promote the program in a variety of venues. External stakeholders were also impressed with the quality and access they had to educational materials developed by the FAA Runway Safety Program such as advisory circulars and videos. Lastly, we found that external stakeholders believed ARI is receiving necessary funding to promote runway safety in the aviation community.

B. Issues of the FAA Runway Safety Program

Interviewees expressed various issues regarding the FAA Runway Safety Program. About one fourth of personnel were concerned about the national Runway Safety Program's lack of awareness about regional issues and initiatives. Many managers believed that the national Program, along with other regional programs, could benefit from a sharing of ideas and issues nationwide. At the Regional level, managers were concerned about the lack of resources (e.g., money, personnel, time) to adequately support runway safety initiatives. Interviewees also expressed concern that the public and employees at all levels were losing interest in runway safety. A complete listing of the reported FAA Runway Safety Program issues is available in Appendix E.

The issue of concern most consistently identified by AAT personnel was ARI's lack of awareness about regional initiatives occurring at the working levels. Over one third of Air Traffic personnel believed that a lack of resources was an issue for the Regional Runway Safety Programs. One fifth of the managers also believed that runway safety is an air traffic issue that should strictly reside within the air traffic line of business instead of being a separate entity. Also, some managers believed the Regional Runway Safety Teams have no authority. This can lead to delay or cancellation of an activity if one LOB disagrees with a decision(s) that was made to benefit all stakeholders.

Managers in the Airports organization believed a lack of personnel, especially in the ADOs, often prevents them from fully supporting the FAA Runway Safety Program. Half of Airports managers expressed concern about the method the RRSPM/Regional Runway Safety Teams use to select airports for RSAT assessments. For example, there were several instances when our interviewees claimed the same airports are subjected to RSATs two or three years in a row. This particular issue aligns with communication issues between LOBs among Airport managers. The ARP division interviewees mentioned the lack of coordination in determining when an airport inspection last occurred, before scheduling an RSAT.

Over one third of AFS personnel said that the National Runway Safety Program would benefit greatly from a regulation requiring all pilots to receive runway safety training. Nearly half of AFS personnel expressed concerned about runway safety topics reaching the public, especially general aviation pilots. Managers expressed concern that pilots attending safety meetings were often the same pilots over and over again. The goal is to reach the pilots involved in the incursions that generally do not show up at these meetings; but there are no regulations outlining the need for runway safety training. Also, Flight Standards personnel believed a lack of pilot expertise on some Regional Runway Safety Teams is an issue that needs to be addressed.

Issues of the FAA Runway Safety Program identified by external stakeholders included ARI's lack of authority within the Agency due to organizational structure and problems with communication among the LOBs. External organizations recognized that, due to a lack of authority, ARI must rely on influence and personal relationships to promote runway safety among the different LOBs, starting with national headquarters. Additionally, external organizations perceive there is still a lack of commitment and proactive support of runway safety among certain FAA LOBs regarding runway safety issues. The belief is that the FAA still has a lot of work to do when ARI is the only organization from which external aviation groups hear the topic "runway safety." The other LOBs with which these external organizations work are not talking about runway safety.

SUMMARY

At the national level, ARI is successful in promoting runway safety awareness to involved parties. Managers at the division and facility levels, as well as external stakeholders, believe leadership within the program is strong. Responses also indicate managers at the division and facility levels are generally confident with the approach taken to runway safety in their region. This includes the perceived usefulness of RSAT meetings and the helpfulness of RRSPMs.

Managers expressed concern that the National Runway Safety Program does not take advantage of Regional Runway Safety Program initiatives by creating a venue to share ideas and problems. Although training and educational material concerning runway safety is useful, interviewees also believe a more productive way to reach airport users is to make runway safety training a requirement at the national level through changes to relevant Federal Aviation Regulations. At a Regional level, managers indicated they would benefit from additional resources, such as money and personnel, which could be used for runway safety initiatives. External stakeholders perceived getting additional support and commitment among the LOBs regarding runway safety as an issue that must be addressed to enhance the FAA Runway Safety Program.

RECOMMENDATION

1. ARI and the RRSPMs should review the areas of concern, evaluate and prioritize them, and revisit current plans and work activity for possibilities for addressing these areas.

Finding #4

Problems with communications, complacency, and human factors were identified as the top contributory factors to runway incursions.

OVERVIEW

Both interviewees and questionnaire respondents were asked to identify primary contributors to runway incursions, based on their expert opinion. External stakeholders were also asked this question.

A. Contributory Factors

Managers were asked to identify what they believed to be the major contributory factors to runway incursions (see Figure 10 below). Problems with communications between controllers and either pilots or ground vehicle operators, complacency, and human factors ranked as the top three contributory factors to runway incursions identified during interviews. Additionally, several interviewees identified a lack of situational awareness and distractions in the tower cab and/or cockpit as contributory factors to runway incursions.

Figure 10 – Contributory Factors to Runway Incursions Identified During Interviews

Contributory Factor	Overall Respondent Percentage	Air Traffic Respondent Percentage	Airports Respondent Percentage	Flight Standards Respondent Percentage
Problems with Communications	14%	13%	9%	14%
Complacency	13%	15%	9%	12%
Human Factors	13%	8%	18%	10%
Lack of Situational Awareness	10%	8%	4%	8%
Distractions	10%	13%	4%	9%
Other*	53%	43%	56%	47%

* Includes lack of training, airport unfamiliarity and complexity, poor signage/markings, and workload. A complete list of contributory factors can be found in Appendix F.

Managers from Air Traffic identified various factors that contributed to runway incursions. Complacency, distractions, problems with communications with pilots and vehicle operators, and airport unfamiliarity on the part of the pilot or vehicle operator were most often identified as contributory factors.

Managers within the ARP organization at the regional level identified two main contributory factors to runway incursions: a lack of pilot training/education and human factors. Facility managers identified lack of pilot education, poor perimeter security and communication as the major contributory factors of runway incursions.

Contributory factors that were most consistently identified by Flight Standards managers included: problems with communications between controllers and pilots, complacency, airport complexity, human factors, and poor signage/markings.

External stakeholders expressed some of the same contributors, such as communication errors, complacency, and airport complexity. Also mentioned were human factors and airport and airspace congestion.

B. Sufficiency of Runway Incursion Data Collection

Over half of division and facility managers across the LOBs believed the data collected during the investigation of a runway incursion was of sufficient detail to identify the main contributory factors. Figure 11 below provides a detailed breakout of responses. Interviewees indicated that information collected during runway incursion investigations was generally used to create training programs and to look for specific problem areas such as "hot spots." Interviewees believed data collection could be improved by initiating data collection on incursions at non-towered airports and obtaining specific pilot background information such as the pilot's home airport and the pilot's current rating.

Figure 11 – Sufficiency of Data Collected During a Runway Incursion Investigation According to Interviewees

Do you believe the data collected during the investigations of runway incursions within your region are of sufficient detail to identify major contributory factors?				
	Overall	Air Traffic	Airports	Flight Standards
Yes	57%	68%	100%	48%
No	30%	28%	0%	31%
Unsure	13%	4%	0%	21%

Most Air Traffic respondents indicated that data collected during runway incursion investigations was sufficient to identify contributory factors. Air Traffic managers did specify that more data about the pilot's background should be collected during runway incursion investigations. Interviewees identified tools such as the Runway Incursion Information and Evaluation Program (RIIEP) and the Aviation Safety Action Program

(ASAP) as being useful in collecting pilot data. Air Traffic managers also indicated that too much time is allowed to pass between an incursion and the data collection process; more specific and accurate information could be gathered if done immediately following an incursion. ATS managers used this information to identify general trends, determine "hot spots," create training, and convey lessons learned. Managers in ATS also mentioned that more narrative and descriptive accounts of incursions would be useful in reinforcing the importance of runway safety to tower controllers.

Airports division respondents overwhelmingly believed data collected during runway incursion investigations was sufficient to identify contributory factors. Managers in ARP use the information gathered during runway incursion investigations to target problem areas on the airport surface and to develop training for Airports division personnel.

About half of AFS respondents believed the data collected during runway incursion investigations was sufficient to identify contributory factors. AFS managers identified two main areas where runway incursion data collection could be improved: initiating data collection at non-towered airports and obtaining pilot background information. Flight Standards managers commented that additional pilot background data, such as that collected by the RIIEP and ASAP, would be useful, and that it is necessary to collect this information in a more timely manner. Managers in the Flight Standards Division also use data collected during the investigations of runway incursions to create training and determine "hot spots." Additionally, these managers look at statistics provided by National Headquarters through briefings and reports to utilize the lessons learned at other facilities. Managers commented that such statistics would be more helpful in targeting problem areas if the data contained more specifics (e.g., categorized by specific airlines and/or airports).

SUMMARY

Respondents perceived poor communications between controllers and pilots, and controllers and vehicle drivers to be the primary contributory factors of runway incursions. Additionally, stakeholders perceived human factors, complacency, and lack of training as playing a significant role in runway incursions. Airport complexity and pilot/driver unfamiliarity with the airport may have also contributed to a large number of incursions according to managers. It is important to note that these data represent the opinions of runway safety stakeholders and are not based on a detailed statistical analysis of runway incursions.

Overall, managers indicated that the data currently collected following a runway incursion are of sufficient detail to identify major contributory factors. Areas where data are considered insufficient include background pilot information and absence of incursion information from non-towered airports. At the facility level, managers indicated that data are primarily used to create training through lessons learned and to determine "hot spots" for potential runway incursions on the airport surface. The relative satisfaction expressed with the current data collected may pose obstacles to enhancing the data collection process.

RECOMMENDATION

1. ARI should look at runway incursion narratives to determine if they correlate with the perceptions of contributory factors.

EVALUATION RESULTS SUMMARY

In summary, this evaluation addressed the extent to which principal runway safety stakeholders coordinated with other LOB to reduce the risk of runway incursions. The evaluation also collected industry perceptions of the FAA's Runway Safety Program to identify observed successes and areas of concern. The evaluation team also collected runway safety stakeholders' opinions of the major contributory factors to runway incursions.

The results of our evaluation indicated an overall familiarity with key runway safety documents (i.e., the 2002-2004 Runway Safety Blueprint, the FAA Order 7050.1, their respective annual Regional Runway Safety Plan) and incorporation of runway safety related activities in their daily work processes. However, runway safety training was identified as an area for potential improvement.

The frequency of interactions between LOBs has been sufficient according to our respondents, but the quality of interactions could be improved. Possible improvements include opportunities to see other points of view (e.g., controllers taking airport surface tours), seeing more support from their LOB management, and getting more explanatory narrative data from ARI down to the field level that could be used for lessons learned within their region or facility.

The team collected industry perceptions of the FAA's Runway Safety Program's successes and areas of concern. At the national level, ARI is seen as successful in promoting runway safety visibility and awareness, having strong leadership and involved staff members, and having commitment to runway safety and willingness to help promote the program.

The main issues identified by industry on the FAA Runway Safety Program were ARI's lack of authority due to a cumbersome organizational structure within the FAA and a lack of commitment and proactive support of runway safety among certain FAA LOBs. Representatives from these industry organizations recognized that, due to a lack of authority, ARI must rely on influence and personal relationships to promote runway safety among the LOBs. These organizations hear ARI talking "runway safety," not the LOBs. Industry representatives and interviewees in the region shared a concern that benefits of regional initiatives are not maximized, causing "reinvention of the wheel."

The evaluation team also collected runway safety stakeholders' opinions of the major contributory factors to runway incursions. Problems with communications, complacency, and human factors were identified as the top contributory factors to runway incursions. Problems with communications between controllers and either pilots or ground vehicle operators, complacency,

and human factors ranked as the top three contributory factors to runway incursions identified during interviews within the FAA. The managers interviewed indicated that the data currently collected following a runway incursion are of sufficient detail to identify major contributory factors.

In assessing the extent of runway safety "horizontal integration" at the facility/district office level, the findings indicate that:

- The majority of Runway Safety Program participants and stakeholders are beginning to demonstrate a runway safety "mindset" in their daily activities
- Interaction between lines of business at the facility/district office level is occurring, but the primary catalysts for this interaction result from either the occurrence of runway incursions or forums initiated by the Office of Runway Safety and regional counterparts
- Managers indicate that they are generally satisfied with what they and their staff are doing regarding runway safety—this satisfaction could prove to be an obstacle to making further progress if ARI believes that there are still significant improvements to be made regarding the reduction of runway incursion risk

The challenge for the FAA is to go beyond the current state of runway safety and achieve a situation where managers, controllers, and inspectors proactively work together, with minimal facilitation from ARI, to reduce incursion risk.

Appendix A-Population of Interviewees and Questionnaire Respondents

Table 1 – Population of Interviewees

Interview Group		# Interviewed
Headquarters Level		
Headquarters Line of Business/Organizational Points of Contact	AAS, ATP, AFS	4
Total Number of Headquarters Interviewees		**4**
Regional Level		
Regional Runway Safety Program Managers	All Regions	9
Regional Administrators/Executive Managers	ACE, AEA, AWP, ASW, ANM	5
Division Management		37
Regional Safety Program Managers		5
Total Number of Regional Interviewees		**56**
Facility Level		
Air Traffic Managers	ACE, AEA, AWP, ASW, ANM	26
Airports Managers		7
Flight Standards Managers (29 @ FSDO, 5 @ CMOs, 5 @ IFOs)		39
Total Number of Facility Interviewees		**72**
Total Number of Interviewees		**132**

Selection Criteria

The Lines of Business Representatives that we spoke to were either people that the evaluation team knew to be the point of contact (POC) in that LOB, or were recommended by that POC.

All personnel to be interviewed were self-defined. The facilities to be visited were selected by their proximity to the regional headquarters office, given the need to maximize benefits for data collection.

Table 2 – Population of Questionnaire Respondents

Facility Level	# Sent Notification of Questionnaire	Number of Responses	Percentage
Tower Managers	352	113	32%
Airport Managers	26	18	69%
Flight Standards Managers (FSDOs, CMOs, IFOs)	95	30	32%
Total	**473**	**161**	**34%**

In Air Traffic, notification was sent via the Air Traffic LOB. The questionnaire notification was provided to the manager of En Route/Terminal Procedures (ATP-100), who forwarded it to all the 520 Managers in the field with a request to forward it to their tower managers.

Within Airports, we distributed the questionnaire notification using a list provided by the Office of Airport Safety and Standards POC. The list contained names of ADO managers and some regional managers who cover the ADO function or manage inspectors. In addition, after the notification had been sent out, we learned that two persons that should have received the notification had not, so questionnaire information was provided to them.

For Flight Standards, the evaluation team sent the information out to all FSDO/IFO/CMO managers, using a list provided by the Flight Standards representative in ARI.

Appendix B – Questionnaire Results

The ACM-10 Evaluation Team designed a questionnaire to solicit input from FAA stakeholders at the facility and district office level regarding the extent to which they have incorporated Runway Safety into their daily work activities and the extent to which they interact and coordinate with their counterparts in other lines of business to reduce the risks of runway incursions. This questionnaire served as an augmentation to the evaluation team's interview data and allowed for the collection of feedback from all nine FAA regions. The questionnaire was distributed to the following groups:

- Air Traffic Control Tower Managers
- Airports District Office Managers
- Airports Division/Branch Managers
- Flight Standards District Office Managers
- Certificate Management Office Managers
- International Field Office Managers

This appendix provides the results of the runway safety questionnaire, broken down into the following six sections:

- Demographics
- Familiarity with Runway Safety Program Documentation
- Incorporation of Runway Safety into Daily Work Processes
- Runway Safety Training
- Runway Safety Program Success
- Summary of General Comments

This appendix presents results aggregated for all respondents and broken down by organization (Air Traffic, Flight Standards, and Airports). The evaluation team also looked at variations by region and found no significant trends among the regions. Therefore, data is only broken out by organization.

Demographics

A total of 161 out of 473 managers (34.0%) responded to the questionnaire. The breakdown of respondents by duty station, years at current facility, region, and pilot experience are included below. Additionally, crosstabulations by duty station and years at current facility, and by duty station and region have been included.

Question 1
What is your duty station?

Duty Station	Frequency	Number of Managers Questionnaire Sent To	Response Rate %
ATCT	113	352	32.1
ADO	18	26	69.2
FSDO	30	95	31.6
Total	161	473	34.0

Question 2
How long have you been with your current facility/district office?

Time	Frequency	Respondent Percentage
Less than 1 year	24	14.9
1-5 years	64	39.8
6-10 years	25	15.5
11-20 years	34	21.1
Over 20 years	13	8.1
Total	160*	99.4

* Not all participants responded to this question

Question 3
In what region do you work?

Region	Frequency	Respondent Percentage
Alaskan (AAL)	2	1.2
Central (ACE)	3	1.9
Eastern (AEA)	12	7.5
Great Lakes (AGL)	38	23.6
New England (ANE)	7	4.3
Northwest Mountain (ANM)	13	8.1
Southern (ASO)	20	12.4
Southwest (ASW)	30	18.6
Western Pacific (AWP)	29	18.0
Total	154*	95.7

* Not all participants responded to this question

Question 4

If you are a pilot, what certifications do you hold?

Certification	Frequency	Respondent Percentage
Not a pilot	60	37.3
Airline Transport Pilot Certificate	25	15.5
Certified Flight Instructor Certificate (CFI)	3	1.9
Commercial Pilot Certificate	13	8.1
Instrument Airplane Rating	5	3.1
Instrument Instructor Certificate (CFII)	5	3.1
Private Pilot Certificate	22	13.7
Total	133*	82.6

* Not all participants responded to this question

Cross-tabulation of Duty Station and Years at Facility

Time	Air Traffic	Airports	Flight Standards
Less than 1 year	21	0	3
1-5 years	47	5	12
6-10 years	19	2	4
11-20 years	17	7	10
Over 20 years	8	4	1
Total	112	18	30

Cross-tabulation of Duty Station and Region

Region	Air Traffic	Airports	Flight Standards	Total
Alaskan (AAL)	1	1	0	2
Central (ACE)	1	0	2	3
Eastern (AEA)	6	1	5	12
Great Lakes (AGL)	29	5	4	38
New England (ANE)	5	1	1	7
Northwest Mountain (ANM)	8	2	3	13
Southern (ASO)	13	1	6	20
Southwest (ASW)	26	2	2	30
Western Pacific (AWP)	22	2	5	29
Total	111	15	28	154

Familiarity with Runway Safety Program Documentation

Question 5

I understand the FAA's overall goals and initiatives concerning the reduction of runway incursions and avoidance of runway collisions.

Response	Air Traffic	Airports	Flight Standards	Overall Frequency	Respondent Percentage
Strongly Disagree	0	2	0	2	1.2
Disagree	2	0	0	2	1.2
Neutral	1	0	0	1	0.6
Agree	39	5	12	56	34.8
Strongly Agree	71	11	18	100	62.1
Total	113	18	30	161	100.0

As the table above shows, the majority of facility managers are aware of the FAA's overall goals concerning runway safety. Only 1.8% of ATCT managers and 11.1% of ADO managers indicated that they do not understand the Agency's goals regarding runway safety.

Question 6

I am familiar with the recently updated Runway Safety Order 7050.1.

Response	Air Traffic	Airports	Flight Standards	Overall Frequency	Respondent Percentage
Strongly Disagree	0	1	0	1	0.6
Disagree	3	6	6	15	9.3
Neutral	7	1	4	12	7.5
Agree	70	9	15	94	58.4
Strongly Agree	32	1	5	38	23.6
Total	112*	18	30	160	99.4

* Not all participants responded to this question

Data collected from questionnaire respondents indicate the majority (82.5%) of facility managers are familiar with the Runway Safety Order 7050.1. These results support interview responses (see Finding 1).

Question 7

My facility/district office is meeting the requirements of the Runway Safety Order.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	0	1	1	2	1.2
Disagree	0	1	0	1	0.6
Neutral	6	2	3	11	6.8
Agree	59	4	8	71	44.1
Strongly Agree	43	6	13	62	38.5
Do Not Know	5	4	5	14	8.7
Total	113	18	30	161	100.0

Questionnaire results indicate most (82.6%) facility managers believe their facility/district office is meeting the requirements of Runway Safety Order 7050.1. A portion (8.7%) of the respondents indicated that they did not know whether their facility/district office is meeting the requirements of the Order.

Question 8

I am familiar with the goals addressed in the 2002 Runway Safety Blueprint.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	1	2	0	3	1.9
Disagree	17	4	3	24	14.9
Neutral	18	1	3	22	13.7
Agree	61	7	16	84	52.2
Strongly Agree	16	4	8	28	17.4
Total	113	18	30	161	100.0

Responses to the questionnaire show that a little over two-thirds (69.6%) of facility managers are familiar with the goals set forth in the *2002-2004 Runway Safety Blueprint*. These results differed slightly from interview responses where the evaluation team found that most managers had received a copy of the *Runway Safety Blueprint* but were not familiar with its contents.

Question 9

I am familiar with the initiatives in my Region's Runway Safety Plan.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	2	1	0	3	1.9
Disagree	4	3	1	8	5.0
Neutral	13	0	1	14	8.7
Agree	66	12	13	91	56.5
Strongly Agree	28	2	15	45	28.0
Total	113	18	30	161	100.0

The majority (84.5%) of managers responding to the questionnaire indicated they are familiar with their Region's Runway Safety Plan. About one-fifth (22.2%) of ADO managers were not familiar with their Region's Runway Safety Plan. These results are similar to interview responses (see Finding 1).

Question 10

I am familiar with the initiatives in my region's Runway Safety Plan for which my organization has responsibility.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	1	1	0	2	1.2
Disagree	5	1	1	7	4.3
Neutral	8	0	1	9	5.6
Agree	54	9	11	74	46.0
Strongly Agree	42	7	17	66	41.0
Not Applicable	1	0	0	1	0.6
Total	111*	18	30	159	98.8

* Not all participants responded to this question

Over three-fourths (87.0%) of questionnaire respondents indicated they are aware of initiatives in their Regional Runway Safety Plan for which their organization has responsibility. These data are similar to interview results in which the evaluation team found that most managers knew they were responsible for certain initiatives in their region's Runway Safety Plan but could not always name the specific initiatives.

Question 11

Runway incursions must be addressed separately from other types of operational errors and pilot deviations because of their significance in daily NAS operations.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	6	3	0	9	5.6
Disagree	20	3	5	28	17.5
Neutral	15	3	6	24	15
Agree	40	3	10	56	35
Strongly Agree	28	4	8	40	25
Do Not Know	2	2	1	3	1.9
Total	112*	18	30	160	99.4

* Not all participants responded to this question

A majority of all respondents (60%) believe that runway safety must be addressed separately from other types of operational errors and pilot deviations. Nearly 40 percent of respondents disagreed or were neutral regarding the statement. This inclination may indicate that that there is not universal support for addressing runway incursions apart from other errors or deviations.

Question 12

The following work activities require me and/or my staff, to specifically address runway safety issues on a regular basis. *(Select all that apply)*

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Air Traffic Tower Control	**113**	1	4	**121**	73.2
Airmen Certification Inspections	0	0	**24**	24	14.9
Airport Certification Inspections	2	**8**	2	12	7.5
Airfield Checks	10	**12**	8	30	18.6
Airport Planning	22	0	15	37	23.0
Incident Investigation	**46**	**8**	**27**	**81**	50.3
Ramp Checks	3	1	19	23	14.3
Safety Seminars	**43**	5	**29**	**77**	47.8
Training Cert	31	2	20	53	32.9

All LOBs indicated that incident investigation was one of their regular work activities incorporating runway safety. In addition, Air Traffic selected Air Traffic Tower Control and Safety Seminars; Airports selected Airport Certification Inspections and Airfield Checks; and Flight Standards selected Safety Seminars and Airmen Certification Inspection.

Incorporation of Runway Safety into Daily Work Processes

Question 13

On average, how often does your staff specifically address runway safety in their primary work activities?

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Daily	35	5	3	43	26.7
Weekly	12	2	10	24	14.9
Monthly	12	2	2	16	9.9
Only When Situations Warrant It	12	2	3	17	10.6
RS is integral to all of my staff's work activities	36	7	11	54	33.5
Do Not Know	1	0	1	2	1.2
Not Applicable	5	0	0	5	3.1
Total	113	18	30	161	100.0

Three-fifths (60.2%) of managers responding to the questionnaire indicated runway safety is either integral to all of their activities or addressed in their daily work processes. These responses, according to organization, are very supportive of the interview answers.

Question 14

Staffs at my facility have specific objectives concerning runway safety incorporated into their individual work plans.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	3	2	0	5	3.1
Disagree	6	2	3	11	6.8
Neutral	7	1	5	13	8.1
Agree	56	7	14	77	47.8
Strongly Agree	35	6	8	49	30.4
Do Not Know	2	0	0	2	1.2
Not Applicable	4	0	0	4	2.5
Total	113	18	30	161	100.0

Over three-fourths (78.2%) of managers responding to the web questionnaire indicated their staff has work plans containing objectives that support runway safety. Responses by organization were similar to the overall results.

Question 15

As a manager, I have sufficient resources to fully address those elements of runway safety under my purview.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	10	1	0	11	6.8
Disagree	19	1	4	24	14.9
Neutral	11	2	3	16	9.9
Agree	49	8	20	77	47.8
Strongly Agree	23	4	2	29	18.0
Not Applicable	1	2	1	4	2.5
Total	113	18	30	161	100.0

Almost two-thirds (65.8%) of the managers that completed the questionnaire indicated they have sufficient resources to address runway safety issues. About one quarter (25.6%) of ATCT managers do not feel they have sufficient resources to address elements of runway safety.

Question 16

To improve elements of runway safety under my purview, I must coordinate most closely with the following individuals *(select all that apply)*:

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
FSDO Manager	**31**	7	4	42	26.1
FS Regional Safety Pgm Mgr	19	6	20	45	28.0
Safety Program Manager	29	9	26	**64**	39.8
Air Traffic Manager	21	**14**	11	46	28.6
Airport District Office Manager	18	8	5	31	19.3
Airports Part 139 Inspectors	10	**16**	2	28	17.4
Local Airport Manager	**111**	**16**	16	**143**	88.8
Airport Facilities	**43**	6	3	**52**	32.3

All LOBs selected the Airport Manager (not an FAA employee) as one of their top three interfaces. Air Traffic indicated the FSDO manager and Airway Facilities as their other top choices, while Airports selected the Tower Manager and Part 139 Inspectors. Flight Standards identified RSPM and SPM as their other top choices.

Question 17a

Data collected during the investigations of runway incursions is of sufficient detail to assess severity.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	0	0	0	0	0.0
Disagree	4	0	2	6	3.7
Neutral	9	3	2	14	8.7
Agree	67	9	18	94	58.4
Strongly Agree	28	5	8	41	25.5
Do Not Know	5	1	0	6	3.7
Total	113	18	30	161	100.0

The majority (83.9%) of questionnaire respondents believe data collected during runway incursion investigations is of sufficient detail to assess accident severity. Information collected during interviews regarding sufficiency of runway incursion data is discussed in Finding 4.

Question 17b

Data collected during the investigations of runway incursions is of sufficient detail to identify contributory factors.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	2	1	0	3	1.9
Disagree	3	0	1	4	2.5
Neutral	16	4	3	23	14.3
Agree	65	8	17	90	55.9
Strongly Agree	22	4	9	35	21.7
Do Not Know	5	1	0	6	3.7
Total	113	18	30	161	100.0

More than three-fourths (77.6%) of facility managers responding to the questionnaire indicated the data collected following a runway incursion is of sufficient detail to identify contributory factors. Roughly one quarter (27.8%) of ADO managers and one fifth (18.6%) of ATCT managers responded negatively to the sufficiency of data collected during runway incursion investigations. Managers interviewed provided some insight to possible causes for this trend stating that more background information from the pilot involved in an incident would be useful. Interviewees also provided perceived contributory factors of runway incursions. These data are reported in Finding 4 and Appendix F.

Question 18

To further improve data collection during runway incursion investigations, the following elements require additional emphasis/specificity: *(Select all that apply)*

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Visibility conditions	40	5	12	57	35.4
Speed of incursion participants	**58**	**9**	**14**	**81**	50.3
Participant Movements (converging/diverging)	27	4	6	37	23.0
Pilot statements	28	4	6	38	23.6
Status of radio communication	36	5	**14**	55	34.2
Aircraft/Vehicle location	37	5	13	55	34.2
Time on position	**57**	**15**	**18**	**90**	55.9
Distances between participants (horizontal/vertical)	42	5	13	60	37.3
Type/ extent of evasive action	**47**	**7**	**18**	**72**	44.7
Other	40	5	12	57	35.4

The top three areas in which respondents believed runway incursion data needed additional emphasis and specificity were: the amount of time that participants were on position (or in the cockpit), visibility conditions, and the type and extent of evasive actions. These identified areas were consistent across LOBs. Flight Standards respondents also identified the area of radio communications status as requiring additional emphasis.

Question 19

Runway Safety Action Team meetings at the airport level are the primary cross-organization forums to address the reduction of runway incursion risk.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	1	0	0	1	0.6
Disagree	11	0	1	12	7.5
Neutral	12	2	4	18	11.2
Agree	58	9	17	84	52.2
Strongly Agree	29	7	7	43	26.7
Do Not Know	2	0	1	3	1.9
Total	113	18	30	161	100.0

Over three-fourths (78.9%) of questionnaire respondents indicated that RSAT meetings are the primary cross-organization forums to address runway safety. This differed from interview responses at the facility level, where RSATs were only mentioned in 21% of interviews. Information regarding runway safety-related interaction at the facility level is discussed in Finding 2.

Question 20

Regional/facility/district office managers need to increase the level of interaction with their counterparts from other FAA organizations (e.g. Air Traffic, Flight Standards, and Airports) to further reduce runway incursion risk.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	2	0	0	2	1.2
Disagree	12	8	5	25	15.5
Neutral	34	6	10	50	31.1
Agree	44	4	11	59	36.6
Strongly Agree	18	0	4	22	13.7
Do Not Know	3	0	0	3	1.9
Total	113	18	30	161	100.0

About half (50.3%) of managers responding to the questionnaire indicated that they need to increase the level of interaction with their counterparts in other LOBs to reduce the risk of runway incursion. However, nearly half (44%) of Airports organization managers disagree that there is a need to increase the level of interaction with managers from other FAA organizations. Additional interaction information is discussed in Finding 2.

Question 21

I coordinate with other FAA organizations (e.g. Air Traffic, Flight Standards, and Airports) to request assistance in reducing runway incursion risk.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Daily	4	0	1	5	3.1
Weekly	5	3	2	10	6.2
Monthly	12	4	3	19	11.8
Quarterly	86	11	23	120	74.5
Only When Situations Warrant It	3	0	1	4	2.5
Not At All	1	0	0	1	0.6
Do Not Know	2	0	0	2	1.2
Total	113	18	30	161	100.0

Nearly three-fourths (74.5%) of questionnaire respondents indicated they coordinate on a quarterly basis with other FAA organizations to request assistance in reducing runway incursion risk. Complete analyses of coordination frequencies and methods can be found in Finding 2.

Question 22

Runway safety participants from other FAA organizations (e.g. Air Traffic, Flight Standards, and Airports) reach out to my organization to request assistance in reducing runway incursion risk with the following frequency.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Daily	2	0	1	3	1.9
Weekly	3	3	1	7	4.3
Monthly	11	3	5	19	11.8
Quarterly	78	11	20	109	67.7
Only When Situations Warrant It	10	1	3	14	8.7
Not At All	7	0	0	7	4.3
Do Not Know	2	0	0	2	1.2
Total	113	18	30	161	100.0

Over half (67.7%) of questionnaire respondents indicated other FAA organizations reach out to them on a quarterly basis to request assistance in reducing runway incursion risk. A complete analysis of coordination frequencies and methods can be found in Finding 2.

Question 23

When requested, I have sufficient resources to fully support actions to reduce runway safety risks for which other FAA organizations (e.g. Air Traffic, Flight Standards, and Airports) have primary responsibility.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	7	1	2	10	6.2
Disagree	29	3	3	35	21.7
Neutral	23	4	6	33	20.5
Agree	44	7	14	65	40.4
Strongly Agree	5	2	4	11	6.8
Do Not Know	5	0	1	6	3.7
Not Applicable	0	1	0	1	0.6
Total	113	18	30	161	100.0

Less than half (47.2%) of questionnaire respondents indicated that they have sufficient resources to fully support the runway safety actions of other FAA organizations when requested. Trends within each organization are similar to the overall data.

Question 24

When requested, runway safety participants from other FAA organizations (e.g. Air Traffic, Flight Standards, and Airports) have the time and resources to assist my organization with our actions to reduce runway incursion risk.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	6	2	1	9	5.6
Disagree	19	2	4	25	15.5
Neutral	31	2	4	37	23.0
Agree	42	8	15	65	40.4
Strongly Agree	4	2	4	10	6.2
Do Not Know	11	1	2	14	8.7
Not Applicable	0	1	0	1	0.6
Total	113	18	30	161	100.0

Almost half (46.6%) of managers questioned indicated other FAA organizations do not have the time and resources to assist others with runway safety actions. Data from each duty station, along with data from the previous question, indicates a potential lack of resources to support runway safety at the facility level.

Question 25

Staff from the Air Traffic, Flight Standards, and Airports organizations at the regional/facility/district office level must work together in an integrated, consistent fashion to: *(Select all that apply)*

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Reduce Operational Errors	**76**	**13**	**15**	**104**	64.6
Reduce Pilot Deviations	**89**	**14**	**25**	**128**	79.5
Reduce Vehicle/Pedestrian Deviations	**96**	**17**	**20**	**133**	82.6
Each Organization can Adequately Address Issues within its purview	25	5	11	41	25.5
Do Not Know	4	0	1	5	3.1

Results for this question indicate that the majority of respondents recognize the need to work together in an integrated fashion to reduce the occurrences of all three types of runway incursions.

Question 26

The support I receive from the Air Traffic organization enhances my ability to successfully reduce the risk of runway incursions.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	2	0	0	2	1.2
Disagree	13	4	5	22	13.7
Neutral	21	4	8	33	20.5
Agree	58	8	13	79	49.1
Strongly Agree	14	1	3	18	11.2
Do Not Know	2	1	1	4	2.5
Not Applicable	3	0	0	3	1.9
Total	113	18	30	161	100.0

Over half (60.3%) of managers responding to the questionnaire indicated the support they receive from the Air Traffic organization enhances their ability to reduce runway incursion risk. Nearly one third (31.9%) of Air Traffic managers responded negatively to receiving helpful support from their own organization, which could be an indication of less than full buy in within Air Traffic. A complete breakdown of these responses can be found in Finding 2.

Question 27

The support I receive from the Flight Standards organization enhances my ability to successfully reduce the risk of runway incursions.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	5	0	0	5	3.1
Disagree	14	3	0	17	10.6
Neutral	36	5	5	46	28.6
Agree	47	6	14	67	41.6
Strongly Agree	5	2	5	12	7.5
Do Not Know	5	2	1	8	5.0
Not Applicable	1	0	5	6	3.7
Total	113	18	30	161	100.0

Almost half (49.1%) of managers responding to the questionnaire indicated the support they receive from the Flight Standards organization enhances their ability to reduce runway incursion risk. Responses within each organization support the overall data. A complete breakdown of these responses can be found in Finding 2.

Question 28

The support I receive from the Airports organization enhances my ability to successfully reduce the risk of runway incursions.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	5	1	0	6	3.7
Disagree	14	0	5	19	11.8
Neutral	33	1	12	46	28.6
Agree	48	7	8	63	39.1
Strongly Agree	9	8	3	20	12.4
Do Not Know	4	0	1	5	3.1
Not Applicable	0	1	1	2	1.2
Total	113	18	30	161	100.0

Over half (50.3%) of managers responding to the questionnaire indicated the support they receive from the Air Traffic organization enhances their ability to reduce runway incursion risk. More than three-fourths (83.3%) of Airports organization managers responded positively to receiving support from their own organization to reduce runway incursion risk. A complete breakdown of these responses can be found in Finding 2.

Runway Safety Training

Question 29a

My staff members received specific instruction regarding the reduction of runway incursion risks through formal FAA Academy training.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	20	6	1	27	16.8
Disagree	44	5	5	54	33.5
Neutral	16	3	6	25	15.5
Agree	20	2	8	30	18.6
Strongly Agree	4	2	4	10	6.2
Do Not Know	9	0	6	15	9.3
Total	113	18	30	161	100.0

Half (50.3%) of questionnaire respondents responded negatively to the conduct of formal runway safety training for their staff members. These data are similar to interview findings in that many managers were unaware of any formal training their staff receives regarding runway safety. Additional training information is discussed in Finding 1.

Question 29b

My staff members received specific instruction regarding the reduction of runway incursion risks through formal recurrent training.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	3	4	1	8	5.0
Disagree	10	1	4	15	9.3
Neutral	15	4	6	25	15.5
Agree	64	6	9	79	49.1
Strongly Agree	18	3	5	26	16.1
Do Not Know	3	0	5	8	5.0
Total	113	18	30	161	100.0

Over half (65.2%) of managers questioned believed their staff members receive formal recurrent training that addressed runway incursion risks. However, one quarter (27.7%) of ADO managers responded negatively toward the recurrent runway safety training their staff receives. During interviews, managers provided examples of formal recurrent training their staff receives regarding runway safety. Additional recurrent training information is discussed in Finding 1.

Question 30a

My staff members received specific instruction regarding the reduction of runway incursion risks through **formal FAA Academy** training.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	22	6	0	28	17.5
Disagree	45	5	6	55	34.4
Neutral	15	3	6	24	15.0
Agree	18	2	8	28	17.5
Strongly Agree	4	2	4	10	6.3
Do Not Know	9	1	6	15	9.4
Total	112*	18	30	160	100.0

* Not all participants responded to this question

Overall, only 23.8 percent of managers at the facility/district office level believe that runway safety is specifically addressed in formal FAA Academy training. This trend holds true for the Air Traffic and Airports respondents, while 40 percent of the Flight Standards respondents believe runway safety is specifically covered in FAA Academy training.

Question 30b

My staff members received specific instruction regarding the reduction of runway incursion risks through **recurrent** training.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	2	4	1	7	4.3
Disagree	13	1	4	18	11.3
Neutral	14	4	6	24	15.0
Agree	62	6	9	77	48.1
Strongly Agree	18	3	5	26	16.3
Do Not Know	3	0	5	8	5.0
Total	112*	18	30	160	100

* Not all participants responded to this question

Overall, almost two thirds (64 per cent) of respondents believe that recurrent training programs for their staff include specific instruction on runway safety. More than 70 percent of managers in the Air Traffic organization believe their recurrent training includes runway safety instruction, while approximately half the managers in the Airports (50%) and Flight Standards (47%) organizations believe their recurrent training includes runway safety.

Question 31

The formal training that my staff members received has proven helpful in reducing runway incursion risks.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	7	3	0	10	6.2
Disagree	12	2	1	15	9.3
Neutral	31	6	9	46	28.6
Agree	47	5	10	62	38.5
Strongly Agree	7	1	3	11	6.8
Do Not Know	9	1	7	17	10.6
Total	113	18	30	161	100.0

Nearly half (45.3%) of managers questioned believe the formal training their staff members receive is helpful in reducing runway incursion risks. However, slightly more that one-quarter (27.7%) of ADO managers responded negatively toward the helpfulness of formal runway safety training their staff receives, indicating a potential need for additional and/or more effective training. Additional training information is discussed in Finding 1.

Perceptions of Runway Safety Program Success

Question 32

In my professional opinion, the FAA's Runway Safety Program and its current set of initiatives will ensure a sustained reduction in runway incursions.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	7	3	0	4	2.5
Disagree	12	2	1	24	14.9
Neutral	31	6	9	56	34.8
Agree	47	5	10	71	44.1
Strongly Agree	7	1	3	6	3.7
Total	113	17	30	161	100.0

About half (47.8%) of questionnaire respondents believe the FAA's Runway Safety Program will ensure a sustained reduction in runway incursions. Approximately one-third (34.8%) of managers within each organization indicated they were neutral about whether the FAA Runway Safety Program would produce a sustained reduction in runway incursions.

Question 33

The actions and initiatives implemented as a result of RSAT meetings that my staff and I attended have had a positive effect on the reduction of runway incursion risk.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	1	0	0	1	0.6
Disagree	15	2	0	17	10.6
Neutral	26	2	12	40	24.8
Agree	57	10	15	82	50.9
Strongly Agree	14	4	3	21	13.0
Total	113	18	30	161	100.0

Almost two-thirds (63.9%) of questionnaire respondents believe RSAT action items have had a positive affect on the reduction of runway incursion risk. However, nearly half (40%) of Flight Standards managers were neutral about the effect RSAT action items has on runway incursion risk. RSAT meetings appear to be the primary forum for cross-organization interaction regarding runway safety (see Finding 2).

Question 34

My regional/facility/district office has been successful in implementing runway safety initiatives.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	0	0	0	0	0.0
Disagree	7	1	0	8	5.0
Neutral	34	2	2	38	23.6
Agree	63	8	22	93	57.8
Strongly Agree	9	7	6	22	13.7
Total	113	18	30	161	100.0

Nearly three-fourths (71.5%) of managers questioned feel their office has been successful in implementing runway safety initiatives. These data support interview responses in which interviewees often identified their Regional Runway Safety Team and the initiatives being implemented in the regions as strengths (see Finding 3).

Question 35

The FAA's current performance metrics of incursion rate and severity are sufficient to measure facility performance regarding runway safety.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	2	1	1	4	2.5
Disagree	29	1	3	33	20.5
Neutral	40	8	11	59	36.6
Agree	39	6	12	57	35.4
Strongly Agree	3	2	3	8	5.0
Total	113	18	30	161	100.0

Slightly less than one quarter (23.6%) of managers questioned responded negatively to the sufficiency of current performance metrics used to measure the success of runway safety activities at the facility level. Similar data was collected from interviewees when they were asked to identify issues of the FAA Runway Safety Program.

Question 36

I periodically analyze runway incursions at airports in my area and modify my work plan accordingly.

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Strongly Disagree	4	0	0	4	2.5
Disagree	19	2	4	25	15.5
Neutral	28	1	7	36	22.4
Agree	46	11	15	72	44.7
Strongly Agree	6	4	3	13	8.1
Not Applicable	10	0	1	11	6.8
Total	113	18	30	161	100.0

About half (52.8%) of questionnaire respondents indicated they do periodically analyze runway incursions at local airports and modify work plans accordingly. Only 11.1% of ADO managers responded negatively to this question while 20.3% of ATCT managers and 13.3% of FSDO managers responded negatively, respectively.

Question 37

Based on your experience, please choose the top three contributory factors to **operational errors** that result in runway incursions: *(Select all that apply)*

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
AT controller workload	24	7	6	37	23.0
Non-standard phraseology	13	1	0	14	8.7
Failure to request instruction read-back	**45**	**8**	**13**	**66**	41.0
Airport taxiway/runway complexity	26	3	11	40	28.4
Insufficient tower supervision	33	**8**	7	48	30.0
Insufficient training	14	1	3	18	11.1
Lack of AT controller memory aid	35	**8**	**21**	**64**	40.0
Frequency congestion	17	2	7	26	16.1
Airport visibility	**42**	0	1	43	26.7
Lack of surface surveillance technology	29	3	1	33	20.5
Distractions in the Tower Cab	7	2	6	15	9.3
Failure to recognize and correct an incorrect readback	**57**	7	**12**	**76**	47.2

The top three contributory factors to operational errors, as perceived by managers at the facility/district office level, include failure to request instruction read-back, failure to recognize and correct an incorrect readback, and lack of controller memory aids. While the failure to request instruction read-back

remained constant across the individual organizations, AT also named airport visibility as a top factor while Airports selected insufficient tower supervision.

Question 38

Based on your experience, please choose the top three contributory factors to **pilot deviations** that result in runway incursions:

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Failure of pilot to follow ATC Instruction	**85**	**11**	**21**	**117**	72.7
Insufficient airport marking/signage	35	**8**	8	51	31.7
Pilot familiarity with the airport	**45**	6	9	60	37.3
Frequency congestion	18	2	7	27	16.8
Insufficient pilot training on ground movement	43	7	**18**	**68**	42.2
Complexity of airport taxiway/runway layout	6	3	1	10	6.2
Pilot proficiency in English Language	**65**	**10**	**15**	**90**	56.0
Non-standard phraseology	13	2	2	17	10.6
Level of pilot experience	11	3	7	21	13.0
Airport Visibility	8	1	4	13	8.1
Pilot workload	29	1	3	33	20.5
Pilot fatigue	5	1	2	8	5.0

The top three contributory factors to pilot deviations, as perceived by managers at the facility/district office level, include failure of pilot to follow ATC Instruction, insufficient pilot training on ground movement, and pilot proficiency in English Language. At the individual organizational level, failure to follow ATC instruction and pilot proficiency in English were consistent factors across all LOBs. Air Traffic managers also identified pilot familiarity with the airport as a major factor. Respondents from the Airports organization noted airport marking and signage as a major issue.

Question 39

Based on your experience, please choose the top three contributory factors to **vehicle/pedestrian deviations** that result in runway incursions:

Response	Air Traffic	Airports	Flight Standards	Frequency	Respondent Percentage
Failure of driver to follow ATC Instruction	**65**	**12**	**14**	**91**	56.5
Insufficient airport marking/signage	**68**	**8**	**21**	**97**	60.2
Driver familiarity with the airport	2	0	1	3	1.9
Non-standard phraseology	16	1	3	20	12.4
Insufficient vehicle driver training	25	5	13	43	26.7
Complexity of airport taxiway/runway layout	6	1	1	8	5.0
Level of driver experience	**71**	**8**	12	**91**	56.5
Driver/pedestrian fatigue	**65**	**10**	**15**	90	55.9
Airport Visibility	10	1	1	12	7.4
Driver workload	20	3	3	26	16.1
Frequency congestion	5	2	1	8	5.0

The top three contributory factors to pilot deviations, as perceived by managers at the facility/district office level, include a failure of the driver to follow ATC instruction, insufficient airport marking/signage, and the level of driver experience. These factors were consistently identified as primary contributory factors in each of the individual organizations. Additionally, respondents identified driver fatigue as another perceived factor.

Summary of General Comments

Questionnaire respondents were asked to provide any additional comments not addressed in the questionnaire. The table below shows the general comments provided by respondents along with the organization. Please note that fill-in responses were edited, when necessary, to ensure anonymity.

Table 1 – General Comments Made by Questionnaire Respondents

Organization	General Comment
AIRPORTS	Financial status can make recommended improvements happen. FAA needs to realize that not all airports can meet the goals when there are other projects (improvements) that need to be addressed. Not all RSAT improvements are needed. Relative performance records at each airport should be considered before FAA provides their findings and recommended improvements. If standardized airport design is met and no V/PD's, then the RSAT findings list should not be extensive.
AIRPORTS	In our Region I am pleased at the effort made by the Runway Safety Program Manager to coordinate with our LOB and manage the program with the acknowledgement of resource limitations. Also remains aware of the interface between the runway safety program and our other program areas. Finally has a willingness to work out related issues in a professional way.
AIRPORTS	The one RSAT meeting attended by our office this year was well attended by FAA, airport users, and Airport management and resulted in a credible action plan.
AIRPORTS	The RSAT program can be an excellent outreach program for educating pilots AND those who operate vehicles on airport surfaces. Recommend more outreach efforts with emphasis on prevention.
AIRPORTS	In order to reduce incursions, Airports Org. revised airport signage requirements, changed sign plans at all airports, and required millions to be spent on new signs.....but the "sea" of signs now confuses more than it helps. In addition, the projects require contractors and equipment to be on the airfield, increasing incursions during construction. The effort to solve the problem made it worse. FAA does not have skill in solving problems. Management does not support field offices with making the tough safety decisions. They issue waivers, modifications of standards, etc. in order to avoid controversy rather than make the tough decision and stand up for safety. I have little or no confidence in upper FAA management to make tough decisions.
AIRPORTS	Runway Safety Program needs to have overall leadership and guidance from headquarters. RRSPM's seem to be floundering, unable to find direction. Everything is last minute, causes LOB's to not want to cooperate due to mode of operation from RRSPM...no direction. RRSPM is unable to work in a team environment, LOB's communicate and solve issues independent of RRSPM.
AIRPORTS	In large part the success and failure of the Runway Safety Program rests with the Regional Program Managers. And ours is hopeless--and nothing is done about it. This regional runway office probably costs the FAA over a half a million dollars/year with all the fancy furniture, supplies, and expensive contractors they have brought on board, but adds no value to the mission. In fact the manager is so bad he serves as a distracter and only provides frustration to the LOB participants trying to do a good job. Things would work better without him. Sorry. And so, you are missing an important part of getting appropriate feedback on the Runway Safety Program if you don't survey or somehow solicit feedback on the individual regional program managers from the LOBs that help support that office's objectives. Why aren't the Regional Administrators doing this? Good question. But as mine said to me, "but what other job could I stick him in?"
AIR TRAFFIC	I have participated in two Safety Summits. Both were very well done.

Organization	General Comment
AIR TRAFFIC	It's rare that airborne errors cause airplanes to get as close to each other as surface incidents, that's what makes surface incidents so scary. That and, typically, that's when conflicting departing aircraft are most vulnerable. From the AT side, we seem to be reluctant to deal aggressively with individuals that have been involved in multiple RIs...we train 'em, re-train 'em, and then re-train 'em again...
AIR TRAFFIC	A program for a large, busy airport with many runways and taxiways and a complex layout does not adapt very well to a small, low-level airport with one or two runways and two or three taxiways. At small, low-level airports, the worst danger for runway incursions, both on the part of the controllers and the pilots is boredom, routine, and complacency. More procedures and gadgets won't help.
AIR TRAFFIC	As a 33 year FAA employee that has been in management for the last 20 years, I have never seen such a state of confusion, lack of accountability and sadly, degraded authority - at all levels of the organization. Basically, as a field AT manager, I am simply trying to survive the mass give away concessions that the previous Administrator gave to NATCA. In my humble opinion, AT needs to be reorganized from the top down. A new contract with NATCA. Staffing of first line supervisors positions must be significantly increased. The number of existing MOU/MOA's and management by memorandum/s and email is totally out of control. We are in desperate need of some real LEADERSHIP. Until some, if not all of these actions are successfully taken, I seriously doubt that the complex issue of reducing OE/OD/RI's will be effectively addressed.
AIR TRAFFIC	ASDE equipment needs improvement in the area of display washout during rain. When airport construction is planned, ATC and the runway safety program should be involved. Some designs can address potential runway safety issues.
AIR TRAFFIC	We had a pilot program with [a major airline] (planes and vehicles) to use GPS and displays to allow ATC, company, and most importantly, vehicle/aircraft to have complete situational awareness with each other and the surrounding area. The FAA needs to move in this direction. This fits with "Free Flight", etc. ARINC was involved with the project. At that time, five years ago or so, it would have required about $200 in electronics for each aircraft. Obviously the total fleet deployment, etc. would be much more. There would also be some bandwidth issues. I say pay for it, require it, and restructure the airport and airspace.
AIR TRAFFIC	Current airport/runway designs are part of the problem for the increase in runway incursions. In the interest of efficiency and engineering simplicity we have made it easy for aircraft to exit the runway - unfortunately, it also makes it easier for the aircraft to inadvertently enter a runway also. Use the "D" design. The vertical portion of the "D" is the runway. The horizontal portions of the "D" are the taxiways leading to/from the runway. The curved portion of the "D" is the quasi-parallel taxiway, which leads to/from the runway. On approach to an airport, the pilot sees only one straight portion (runway) and does not confuse it with the curved portion (taxiway).
AIR TRAFFIC	First, the primary cause of most pilot deviations remains pilot actions yet any attempts to correctly address these pilot error through enforcement actions assigned to Flights Standards, the overwhelming majority of action items and duties associated with runway incursion prevention inexplicably falls to Air Traffic. Second, the capricious and arbitrary manner in which the Runway Safety Office has used undefined and previously unknown terms such as "high energy intersections" to impose additional requirements and airport design standards outside those contained in the applicable Advisory Circulars is counterproductive to effective relations between the FAA and outside agencies in general, and Air Traffic Managers and local Airport proprietors in particular.

Organization	General Comment
AIR TRAFFIC	I have had extensive involvement with the FAA Runway Safety Program due to the statistical burp of RI and SI at [my facility] in 2002. We have undertaken a number of projects to improve airport safety. However, the control tower cannot sufficiently see aircraft positions relative to the runway hold short bars in too many places on this airport. The tower also cannot tell which runway an aircraft is landing on our parallel runways due to the location and height of the tower with respect to these runways. We have an approved but not funded new tower proposal in [my state]. Even though we led the country in the number of RI/SI in 2002, we could not be prioritized for a new tower. We could have prevented over 50% of the RI/SI if we could tell which runway an aircraft was lined up to land on. The issue of tower visibility must be addressed if we are going to be successful in curbing this safety issue at this ATCT.
AIR TRAFFIC	I am the RSR for our facility and have been since the SIPT days. I have never heard of, or seen, the "2002 FAA Runway Safety Blueprint" or [the Regions] "Runway Safety Plan". The FAA continues to develop new "programs" and/or "plans" without providing a whole lot of guidance and/or training. Further, many times one "plan" is just replaced by another "plan", with very little change. Fortunately, we were advised of the transition from the SIPT to RSAT. We can have all of the "plans" and "programs" that we want in the FAA, but that doesn't mean that the system is safer. We don't need to look out the tower windows to see problems with the system. What we really need is supervision to make sure that ATCS are doing their jobs correctly. The level of supervision at our facility is half of what it once was. Many OS have been with the FAA for at least 15 yrs, which means that they get the same 5 wks of vacation that many ATCS receive. Guess what? The OS want time off in the summer-same as ATCS. This means that not only are our staffing levels reduced, our supervisory levels are reduced also. I am the facility QATS, I also maintain my currency. We also have a PPS; he maintains his currency. I spend too much time trying to track the reporting requirements of the various "plans" and "programs" that the FAA has developed. Are the plans effective? Are we being proactive with Runway Safety? No. Myself and the other RSR (NATCA Safety Rep) do not have time to meet to be creative and look to find new ways to reach the ATCS with information on reducing runway incursions. Briefing items are selected from either the facility SOP or 7110.65; basically refresher training. If increasing Runway Safety (and reducing OE/Ds and runway incursions) is so important to the FAA, why do they not provide the resources (money for a perimeter road, for example; or training)? This is a pathetic system in which we work and every new initiative is just a joke.
AIR TRAFFIC	I think the FAA should count runway crossings as part of the traffic count. It would keep controllers and managers aware of the frequency of these movements. Clicking a counter is a good memory aid for controllers. If the runway crossings were counted FAA Managers would see when and how many crossings take place on their airport. I work at an ATC6 Facility. We have two heavy maintenance businesses on our airport. Some days they generate more activity in runway crossings than the arrivals and departures generate. Who would consider that kind of activity at an ATC6 Facility?
AIR TRAFFIC	By pulling runway safety out of air traffic, there was supposed to be better coordination between offices, greater oversight. What in fact has happened in [my region] is a program manager who thinks he knows what is needed, without consulting the other players, and then trying to force it down the throats of those people who work the traffic and run the airport. Not sure how this is being handled in other regions, but I think the improvements made at many of the airports were made because of increased media attention driving facilities and airports to look at their operations vs. runway safety being a driver in the efforts to improve.
AIR TRAFFIC	More research needs to be conducted to look at the human factors involved in runway incursions and possible "work-arounds." Constructing more taxiways to eliminate the need to cross active runways
AIR TRAFFIC	Overall, the program has made great strides in helping reduce runway incursions. The result, safer airport ground environments.
AIR TRAFFIC	Regional energy wasted on Hypothesis development. Changes will not occur overnight. Improvements will take time. Tower controllers will be more alert on their feet rather than on their seat.

Organization	General Comment
AIR TRAFFIC	The X Region Runway Safety Program Office is what I hope the rest of the regions are experiencing. Cooperation and coordination above reproach. Continued support with the goal of reducing incursions is always the top issue.
AIR TRAFFIC	The FAA categorizes airports as Part 139 or not and requires fences and training of vehicles drivers accordingly. There should not be a distinction. All airports must be safe and this requires security and training.
AIR TRAFFIC	The majority of the RY Incursions at busy Part 121/129 airports has been caused by PDs. The FAA keeps forcing weekly ATC training (briefings) but ignores the pilot training issue. We have a locally developed a pilot training program that has been highly successful; however the opportunities to use it are limited. The FAA needs to concentrate on the target area (pilot training/awareness) and stop focusing on the "captive" ATC audience.
AIR TRAFFIC	The runway safety program has to overcome the perception of those who think that all elements of risk associated with flying can be eliminated. We accept automobile accidents as an inevitable consequence of driving, yet there seems to be an unspoken and dogmatic belief that any risks associated with operating an aircraft are unacceptable and need to be mitigated at any cost. Flying is all about managing risks and the runway safety program should embrace that philosophy rather than focus on the elimination of all runway incidents (as some believe). If we do not, our endeavors will fail. Persons choose to fly and we are a success when we have all done everything within reason to manage those risks, even after a tragic accident.
AIR TRAFFIC	The success and failure of the Runway Safety Program has been on the back of individual Air Traffic Managers and the personnel assigned to them. Areas where every effort is being expended at personnel sacrifice because individuals care and are conducting training, pilot/controller forums and awareness meetings, airport meetings, construction meetings, and similar events mostly on their own time and expense is success happening. The Agency is not properly funding or staffing the program but merely directing.
AIR TRAFFIC	There is no evidence that a Runway Safety Program is necessary/needed at this facility. I do not have the necessary resources (personnel) to responsibly comply with the program.
AIR TRAFFIC	This issue will continue to be a problem until the FAA holds controllers/pilots responsible for their actions. If committing an FAR violation/missing an ATC instruction or committing an OE/OD has no consequences then current enforcement will have no effect. In addition to that, many airports are so complex at best; professional pilots have a difficult time managing their operations. Clear concise signage is necessary as well as taxiway configurations that make sense, such as the SMGCS system. More attention must be paid to this problem such as markings, lighting, tower staffing and airport layout. This problem can be fixed, but it will cost money and require a commitment by the FAA to fix it, not just talk around the problem.
AIR TRAFFIC	This program should not be a new one. It should have been ongoing for years. All we have done is written it down again. It takes continuous work by all involved parties.
AIR TRAFFIC	We need R&D for lower level facilities. ASDE will probably never be installed at my facility.
AIR TRAFFIC	We, as an Agency, have relied on "Programs" to address problems. The reality is resources are not there. If you want to reduce Runway incursions and operational errors increase Supervision.
AIR TRAFFIC	When the RIAT came, 4 people came for 3 days. When the Runway Safety Team came, there were 6 members for a one-day follow up. The cost for all the travel was enormous. I think a teleconference would have been just as effective.
FLIGHT STANDARDS	Additional information and education needs to be distributed to the foreign CAA's to improve international air transportation.
FLIGHT STANDARDS	I don't know what you can use to measure success. The root cause seems to be human in nature, i.e. people make mistakes. Just because the numbers go down doesn't mean success, nor does going up mean failure; continued efforts by everyone-especially the product user- needs to be emphasized and occur.

Organization	General Comment
FLIGHT STANDARDS	The current system of identifying taxiways and runways seems to be a major contributing factor in incursions. Since these incursions include both pilots and vehicles, a more simplified system of marking taxiway and runways needs to be developed. The marking and signage system should be similar to the highway signage. Most vehicles drivers and pilots are already familiar with highway signage and a positive habit transfer would result in a more simplified system. Why should there be a more complex system for marking and signage?
FLIGHT STANDARDS	We have identified the efforts of our RRSPM as well as ARI-2 from Washington Headquarters, as making a significant contribution to this educational program.
FLIGHT STANDARDS	The Runway Safety Program is a good thing and we are professionally addressing the problem in a coordinated fashion. We do need constant new reminders of its importance or it will get lost amongst all the other important work that we do. New promotional material will help us maintain focus.
FLIGHT STANDARDS	The Runway Safety Program is important but there are other areas where safety dollars should be sent. At some point we may need to move on to other focused initiatives.

Appendix C – FAA Academy Training Courses Relevant to Runway Safety

As discussed in Finding 1, runway safety specific training varies depending on the organization. Table 1 below provides an outline of FAA Academy courses for newly hired personnel that contain elements of runway safety. These were determined through consultation with FAA Academy personnel and reviewing the FAA Academy's Catalog of Training.

Table 1 – FAA Academy Courses Containing Runway Safety Elements

Course Title and Number	Organization	Course Length	Relevance to Runway Safety
Runway Incursions (TLP-24)	Air Traffic	1.5 Hours	Defines runway incursions and discusses ways to prevent them.
Ground Control (TLP-22)	Air Traffic	5 Hours (Combined)	Discusses surface operating practices to prevent runway incursions from a ground controller perspective.
Taxi and Ground Movement (TLP-23)	Air Traffic		Discusses surface operating practices to prevent runway incursions from a ground controller perspective.
Local Control (TLP-26)	Air Traffic	3 Hours	Discusses surface operating practices to prevent runway incursions from a local controller perspective.
Crew Resource Management (TLP-2)	Air Traffic	6 Hours	Discusses the importance of teamwork in preventing runway incursions.
Tabletop Lab	Air Traffic	7 Hours	Controllers demonstrate runway incursion prevention techniques using memory aids.
IFR Lab	Air Traffic	5 Hours	Controllers demonstrate the ability to safely direct aircraft that are not visible from the tower.
TOTS/EDS Lab	Air Traffic	14 Hours	Controllers demonstrate the ability to prevent runway incursions through movement instructions and proper phraseology.
Introduction to Airport Lighting, Marking, and NavAids (06402)	Airports	40 Hours	Provides information regarding correct lighting, marking, and signage on the airport surface.
Crew Resource Management (12062)	Regulatory Standards	16 Hours	Discusses the effects of teamwork on safety.
Aviation Safety Action Programs (ASAP) (21430)	Regulatory Standards	16 Hours	Provides training to inspectors involved with ASAP. Discusses methods for achieving safety goals.

Appendix D – Suggestions for Improving Horizontal Integration Identified by Interviewees

Interviewees were asked if they had any suggestions for how the LOBs could better work together to further reduce the risk of runway incursions. The primary areas of improvement most consistently identified were:

- Increased support from FAA headquarters organizations (often referred to as "top-down" support)
- Better coordination and participation between lines of business
- Improved communications between lines of business and increased sharing of information and data

Table 1 below provides a complete listing of these suggestions identified along with position/duty station. Suggestions for improving horizontal integration derived from interview responses are also discussed further in Finding 2.

Table 1 – Suggestions for Improving Horizontal Integration as Identified by Interviewees

Position	Suggestions
RA/Exec Mgr	On a national basis, the way we structure RSAT meetings could be improved
RA/Exec Mgr	Getting additional personnel so they could get more involved
RA/Exec Mgr	Stove-piping occurring right now must be corrected, with emphasis from the top-down
RA/Exec Mgr	Focus on the positive things that are happening
RA/Exec Mgr	All LOBs must equally understand the need to continue improvement – support for the RSP should be automatic
RA/Exec Mgr	Is working well. Would like to see ARI-1 use time and influence to encourage the LOBs at HQ to work together on RS issues. This will trickle down to the regional level
RA/Exec Mgr	They need to get more fully immersed. The LOBs could provide fulltime support to RS
RA/Exec Mgr	We also need more support from HQ
RRSPM	Each organization needs to put aside differences and work together and let go more when interfacing with each other
RRSPM	In the FAA, information is power, so everyone is very protective of their initiatives instead of sharing initiatives a little more
RRSPM	In the FAA, we have trouble getting past the confrontation phase to get to decision phase
RRSPM	If we went back to the Regional Director concept, would get more top-down horizontal integration. Would have to have the cooperation of higher managers
RRSPM	LOBs need to stop being so territorial; this is a national problem. The problem usually occurs between AT and Airports
RRSPM	In an ideal world, provide a fulltime employee from each LOB to the Regional RST; this is a funding and staffing issue. It may not be necessary in all regions. It would make sense where RI is a bigger problem like in AWP
RRSPM	Performance standards make a difference if specific enough. If it becomes an organizational or agency goal, people will establish programs to address them
RRSPM	Communication should be emphasized
RRSPM	FS needs to be more involved in RS efforts. FS division manager will not pursue RIIEP since it is no longer formally sanctioned

Position	Suggestions
RRSPM	LOBs had "circuits" existing prior to RS office, RRSPM lets the process run, and gets involved if a problem continues
RRSPM	Communication 3 ways is the main key for improving the working relations between the LOBs
RRSPM	It would have to be top-down. The managers at the highest levels need to show in their own actions that they are working with other LOBs on RS versus just mandating that the staff below them must interface with other LOBs
RRSPM	Need buy-in from the top, the division managers, then the team members will make sure everything flows on target
RRSPM	Have to have communication and outreach from the top, then it flows down. If managers show concern and desire for 100% participation, the key is communication
RRSPM	What concerns the RRSPM most is when they do an RSAT or assessment and then go back to the LOBs, then are told that the LOB can't do whatever was discussed at RSAT or assessment. The reaction should be discussed, not just scratched due to lack of resources or crossed out because RA doesn't want LOB to see that it wasn't done, not going to work for the region. That causes disparity between the team members when facility/DO manager says we can't do that. Normally it's a lack of resources that they can't do
Division Manager	RS has to be a higher priority so LOBs can send a rep to every RSAT and/or Pilot meeting. LOB often missing is Airports and sometimes FS
Division Manager	Within the Region, these groups already work very well together. They all recognize the problem and focus on common goals, and work together to achieve the goals
Division Manager	Region has a cohesive team. No suggestions for improvement
Division Manager	LOBs already work well together in their region, probably thanks to RRSPM
Division Manager	Other LOBs and locals need to inform 600 whenever a change is planned on the airport surface
Division Manager	AT is not as diligent as they could be in teaching other LOBs what they will hear from controllers. Controllers should teach pilots and FBOs what are the good and bad times to call the tower. They need to be better at standard phraseology, especially people in vehicles
Division Manager	They currently work together well, but conflicting agendas and that's where the problem comes in. It's okay to have different agendas, but they all need to have the same goal(s). It is hard to support solutions that could be detrimental to AT
Division Manager	Need more meetings that are all comprehensive of the RS players to find out what the RSAT is doing. About 85% of the time, he only hears about the RSAT whereabouts from his SPMs. To his recollection, [RRSPM] has not sat down with Division Managers of each LOB to explain where he is headed and trying to do
Division Manager	A great deal of progress has been made since the RS first began; the RSP should reside in ATS instead of directly under the RA, then maybe the RSP could focus
Division Manager	Close ARI and put RS back in AT where it belongs. The money used for ARI could be better spent elsewhere
Division Manager	A little more emphasis on facilitation by the RRSPM to bring people together
Division Manager	Groups need to get the full story before speaking out about issues
Division Manager	Unsure, we are too distant from the program
Division Manager	We often don't get the full story from FS – everything is attributed to Airports, but pilots are a major source of the problem
Division Manager	At the HQ level, we need a way to resolve differences between the LOBs. It is embarrassing to have people from different LOBs airing their dirty laundry during public meetings such as RSATs
RSPM	They are all separate entities and RS is the only example of the LOBs working together that he can recall. This is the first time that all LOBs have been pulled together in one spot; but trying to get these independent entities to work together – that's another matter which he doesn't have an answer for because each has their own focus
RSPM	Within this region, there are really no improvements that need to be made. The RRSPM has done a good job of pulling the LOBs together
RSPM	Consider having town hall meetings w/a rep from each LOB so that all groups are on the same page. It would also be a chance to bring everyone up to speed on current initiatives. RS people could talk about signs/markings; FS could discuss any PDs at the airports. The tower people could talk about how to interact with a tower controller. Airport Ops could talk too. That would be better than RS by itself
RSPM	We have a good group in this region; everyone works together. They may butt heads, but they come up with a solution; each brings their expertise
RSPM	Is friction between pilot and FAA and pilot and controllers. Animosity between pilots and controllers. If a controller messes up, it is not reported as an OE
ADO	Should have focused initiatives

Position	Suggestions
ADO	There is little feedback from FS regarding the pilot's RI story. Often we are just told that it's a marking issue, yet we never see any hard facts that show this. It would be nice to see some documentation from FS that backs up the assumption that an incursion is the result of poor markings
ADO	RRSPM should get in the middle more to help facilitate coordination when there are differences among the LOBs
ATCT	Would like to see more interaction from Airports Division. When they couldn't attend an RSAT, they didn't even follow up to discuss what occurred
ATCT	FS is overlooked and is a very important piece of the pie
ATCT	Need to get down to the Part 91 level to make them understand the potential severity w/poor RS practices
ATCT	Quarterly meetings w/all players to talk about what's going on keeping everyone in the loop
ATCT	RSAT meetings only once a year
ATCT	Holding local RSAT meetings
ATCT	At field level, there should be more supervisors and staff that could be available to attend meetings. Currently they are focused more on what needs to be done at the facility, not at the regional or headquarters level
ATCT	Everyone contributes and works well together. They make it a priority to attend RS related meetings
ATCT	It would be helpful to have websites that pull all the information from the different organizations together. This should also include international RS work
ATCT	Needs to be consistent procedures and rules. For example, there is a conflict between AT and ADO rules as far as what constitutes the RS area
ATCT	No suggestions. It's not broken, so don't fix it
ATCT	Could always be better, especially with Airports. The Airports Division has been somewhat uncooperative. They tend to blame the pilots instead of looking at the issues involved, especially marking issues
ATCT	There probably are, but I'm not sure how. Maybe a yearly conference where all managers (not just the hub managers) are invited would help
ATCT	There are a lot of people trying to protect their turf right now; that has caused a roadblock to working together; FS has left them out
ATCT	ARI needs to have authority over the LOBs so that one division doesn't have the final say-so on an initiative. Give them the authority that goes with the responsibility
ATCT	RS should reside in AT. The regional RS office doesn't work well with us. The ideas are not always well thought out and the RRSPM has no air traffic experience. Coordination needs to be improved. Action Items are not always open for discussion; even when concerns are expressed they tend to get overlooked
CMO/FSDO/IFO	At the regional level, there should be quarterly meetings to discuss the RI data that has been collected. A lot of data is being collected through the ASAP and forwarded onto the region. After that point, it seems that nothing is done with it. This type of coordination is occurring at the local level. For example, a FSAT meeting is held every week with an ALPA rep, company rep, and FAA rep present. Once a week, this group comes together and meets with the local ATC. He is not aware of regional or national get together in a comprehensive manner with the LOBs on a regular basis to discuss the data they have collected
CMO/FSDO/IFO	It's on all the LOBs' radar scopes, attacking from different directions. He doesn't have additional suggestions
CMO/FSDO/IFO	We are just starting to scratch the surface. The LOBs will start working together more, especially with upcoming technologies.
CMO/FSDO/IFO	We would like to see AF and Airports more proactive instead of reactive
CMO/FSDO/IFO	In general, there needs to be more accountability built in
CMO/FSDO/IFO	Controllers may not have mechanisms in place if they see problems (i.e. how to report something)
CMO/FSDO/IFO	LOBs may need to do more analysis of some things
CMO/FSDO/IFO	Feels it is very good right now. RRSPM does an excellent job of getting to managers individually and pulling them together
CMO/FSDO/IFO	RSAT meetings are quite effective for getting the LOBs together. Suggestion is to do a Triennial Meeting with all players every 3-5 years minimum
CMO/FSDO/IFO	When we identify issues with the other LOBs jurisdiction, they should respond.
CMO/FSDO/IFO	We need to get back to allowing pilots in the tower to see the surface from another point of view. Also, pilots have a fear of controllers; we need to start breaking down the wall between them and tower visits would help with that
CMO/FSDO/IFO	Hold meetings to discuss RS issues, such as problems at [a particular airport]. Other than [a particular airport] they think RI are rare

Position	Suggestions
CMO/FSDO/IFO	Need to get out and meet each other. It would be nice to have a focal POC so that when something happens, you would know whom to call
CMO/FSDO/IFO	There should be more coordination between FS and AT, but it seems that AT does not want the flying public to know that they are "friends" with FS. FS is seen b the flying public as the "black hat." Coordination seems to be better at the regional level and this may be a result of the organizations being under one roof
CMO/FSDO/IFO	Need a stronger focus from above so that we are encouraged to work together at lower levels. This has been done so far, but needs to continue
CMO/FSDO/IFO	Already work together well and communicate as necessary
CMO/FSDO/IFO	Are pleased to see as much activity as they have. Getting the regions together more often to discuss different ideas and programs would be beneficial
CMO/FSDO/IFO	Would be good for SPM to talk to industry
CMO/FSDO/IFO	At the Regional level, all the LOBs have their own goals. Maybe having quarterly meetings to bring all the LOBs together as a focus group to discuss where/how RS fits into these goals may be helpful
CMO/FSDO/IFO	There doesn't appear to be any proactive coordination. Coordination only occurs after a RI happens – doesn't prevent an RI. However, it is important to know that deficiencies exist in the system and where they are. A national database, which shares info across the different LOBs would be helpful. It would allow for the sharing of info regarding deficiencies at different airports. For example, if an AIRPORTS would share inspection results with the IFO, then the IFO could pass on to their foreign carriers before they fly into that airport
CMO/FSDO/IFO	We have a cooperative effort among the LOBs. Biggest problem is sharing information

Appendix E – Strengths and Issues of the FAA Runway Safety Program

Strengths of the FAA Runway Safety Program Identified by Interviewees

Interviewees were asked to provide strengths of the FAA Runway Safety Program. These responses were then placed into one of nine categories (see Table 1). Response percentages from each interviewee group are listed in Table 1 below. Interviewees indicated the heightened visibility and awareness about runway incursions, and the communication and coordination fostered by the Program have been successes of the FAA Runway Safety Program. Leadership and commitment were also frequently named as strengths of the FAA Runway Safety Program. For additional information regarding strengths of the FAA Runway Safety Program, please see Finding 3.

Table 1 – Interview Strength Response Percentage

Strength	RA Response Percentage	RRSPM Response Percentage	Division Managers Response Percentage	Airports Response Percentage	Air Traffic Response Percentage	Flight Standards Response Percentage
Heightened Visibility and Awareness	10.0	0.0	9.3	66.7	24.0	17.4
Education and Training	0.0	0.0	4.8	0.0	4.0	10.9
Communication and Coordination	20.0	43.8	32.5	33.3	12.0	17.4
Data Collection and Statistical Analysis	0.0	18.8	2.3	0.0	8.0	10.9
Leadership and Commitment	60.0	12.5	41.9	0.0	44.0	28.3
Funding	10.0	12.5	0.0	0.0	0.0	8.6
Increased Safety/Reduced Incursions	0.0	6.2	0.0	0.0	4.0	0.0
Standardization	0.0	0.0	6.9	0.0	4.0	6.5
Technological Improvements	0.0	6.2	2.3	0.0	0.0	0.0

Table 2 below provides strengths identified by each interviewee along with the position. Please note that responses were edited when necessary to ensure anonymity.

Table 2 – Strengths of the FAA Runway Safety Program Identified by Interviewees

Position	Strength	Number of Instances Strength Was Identified
RA/Exec Mgr	The Region is really pushing in lots of areas. All regions are trying hard, but there is not a centralized focus; in a few weeks will meet in DC. ARI has stuff they will hear about. ATP will be there to talk about OEs.	1
RA/Exec Mgr	It takes a while to develop a relationship with other LOBs/reps – we have committed people here and good airport sponsors.	1
RA/Exec Mgr	Experts from many lines of business are represented on the Regional Runway Safety Team. The RRSPM is a good leader, has vision, and he gets down into the weeds of things. [RA] has seen [RRSPM] personal commitment	1
RA/Exec Mgr	ARI has the funding to place emphasis on runway safety via speeches and travel. ARI provides a lot of support to the regions and it's always better to have support from Headquarters when trying to change things. An office in Washington is always a plus	1
RA/Exec Mgr	The director of ARI is articulate, respected	2
RA/Exec Mgr	The RRSPM is a strong leader who is known and respected by many people in the Region. [RRSPM] gives excellent presentations. He can call directly to a tower because he knows the people.	4
RRSPM	Working w/the LOBs to generate National change across the country	5
RRSPM	It's ability to develop and communicate strong policy direction. Policy direction from ARI is keen and well done. The ARI director will call to discuss plans, see how they fit with the region.	2
RRSPM	Putting the burden on the LOB for preventing RI and not just the RRSPM, but actually the Division Manager or associate managers that can do something about it.	1
RRSPM	The data structures ARI developed to analyze incidents and identify trends at the regional level have been very helpful.	3
RRSPM	Resources and support we're receiving from HQ is the biggest strength of the program. Also, the fact that HQ is coming down and participating in local initiatives makes local participants eager to reach up to the challenge and show interest	2
RRSPM	There has been a difference (reduction) in the number of vehicle/pedestrian incursions in the Region.	1
Division Manager	ARI has made runway safety a hot topic, brought it to the surface. They have a link with industry	4
Division Manager	Talking to and educating pilots, RSATs (and the involvement by the lines of business). He's glad they provide as much material as they do to the RRSPMs	5
Division Manager	The National Runway Safety Program has helped to bridge the lines of business. The work done at a facility level has been good (RSATs, RIATs, etc.).	10
Division Manager	They tell the good and the bad, very straightforward and upfront.	1
Division Manager	They have good data and take proactive measures to prevent runway incursions	1
Division Manager	ARI-1 is a strong leader and good interface. He supports perimeter taxiways, which promotes runway safety. RSP had an impressive video	1
Division Manager	The lines of business have a good working relationship with the Regional Runway Safety Team and the RRSPM. The RRSPM is a strong facilitator, good at training, helps with resources, and is very supportive of runway safety initiatives.	16

Position	Strength	Number of Instances Strength Was Identified
Division Manager	Made remarkable headway with all the interventions they have done/preventive measures (e.g., the standardization of signage and fixing bad lighting on airports). They have identified many of the risks and hazards and narrowed them.	3
Division Manager	Checklist they use is not deviated from.	1
Division Manager	Day, night & bad weather tours of the airport surface for controllers are an excellent idea to get controllers down on the airfield.	1
ADO	They always invite us to RSATs, which gives us the chance to voice our opinions and concerns about whether something is affordable, feasible, practical	1
ATCT	All groups/LOBs work well together.	5
ATCT	They are able to take massive amounts of data and find trends.	2
ATCT	Keeping people's awareness up.	9
ATCT	The success of the program is based on whether the number of runway incursions is up or down.	1
ATCT	ARI has done a good job of standardizing airport markings and signage	1
ATCT	They provide good materials and are well organized.	1
ATCT	It's nice to have one person dedicated to one thing; you get a quick answer. The RRSPM keeps the focus on runway safety	2
CMO/FSDO/IFO	All the lines of business work together to achieve the same goals.	4
CMO/FSDO/IFO	The Regional team does a good job with presentations and interactions with the public.	12
CMO/FSDO/IFO	The data collected and how it is looked at has improved.	4
CMO/FSDO/IFO	The materials and funding have been good.	4
CMO/FSDO/IFO	ARI has raised awareness	8
CMO/FSDO/IFO	We have a good Regional Runway Safety Team. The meetings are helpful for interacting with industry and keeping everyone on the same page.	11
CMO/FSDO/IFO	They have standardized signs and markings.	3
CMO/FSDO/IFO	ARI has saturated the field with educational information.	4
CMO/FSDO/IFO	Doing very good job going to individual airports, not sold on value	1
CMO/FSDO/IFO	The innovative things this office does (e.g., uncontrolled airports being reviewed results in identifying things that may prevent a runway incursion. There are 139 Certified Airliners coming into those airports in addition to the planes that fly around without radios – all need to be educated.)	1

Issues of the FAA Runway Safety Program Identified by Interviewees

Interviewees were asked to provide up to issues concerning the FAA Runway Safety Program. These responses were then placed into one of ten categories. These percentages from each group are listed in Table 3 below.

Responses given by interviewees indicated a lack of resources (funding, personnel, and time) as one of the main issues of the FAA Runway Safety Program. Poor communications and coordination among runway safety stakeholders was also frequently identified during interviews. Many managers interviewed expressed concern about the growing lack of interest in the runway safety program as well. For additional information regarding issues of the FAA Runway Safety Program, please see Finding 3.

Table 3 – Interview Issue Response Percentage

Issue	RA Response Percentage	RRSPM Response Percentage	Division Managers Response Percentage	Airports Response Percentage	Air Traffic Response Percentage	Flight Standards Response Percentage
Lack of Resources	12.5	15.4	26.5	0.0	25.8	19.0
Lack of Support	0.0	0.0	5.9	0.0	9.7	7.2
Lack of Accountability	25.0	7.7	8.7	0.0	0.0	4.8
Apathy/Disinterest	12.5	7.7	11.8	0.0	12.9	11.9
Poor Communications and Coordination	37.5	46.1	26.5	0.0	16.1	11.9
Lack of Training	0.0	0.0	2.9	0.0	0.0	16.7
Standardization	0.0	7.7	5.9	0.0	3.2	0.0
Inadequate Data Collection	0.0	15.4	11.8	100.0	12.9	19.0
Airport Complexity and Layout	0.0	0.0	0.0	0.0	0.0	0.0
Political Implications	12.5	0.0	0.0	0.0	19.4	9.5

Table 4 below provides issues identified by each interviewee along with the position. Please note that responses were edited when necessary to ensure anonymity.

Table 4 – Issues of the FAA Runway Safety Program as Identified by Interviewees

Position	Issue	Number of Instances Issue Was Identified
RA/Exec Mgr	ARI needs to continue to emphasize runway safety at Headquarters among the lines of business	4
RA/Exec Mgr	It would be nice to see the RRSPM have a more stable staff. [RRSPM] is currently unable to backfill positions because of a lack of funding	1
RA/Exec Mgr	OEs – they work them hard, but are handcuffed by the NATCA contract. They need to bridge the gap. There should be an AT problem that they need to fix. V/PDs are Airports' problem. ARI has no authority over the LOBs. The LOBs have to pick up the slack	1
RA/Exec Mgr	For RSAT meetings in the future, can we show a direct connection with having RSATS and achieving results? When we do RSAT meetings, talk about sign and markings, lighting conditions, look at everything except human factors and awareness	2
RA/Exec Mgr	Regions don't necessarily need to replicate National. National should set overall direction; Regions should deal with local issues.	1
RA/Exec Mgr	We get so focused on runway safety that we may miss other problems that pop up	1
RRSPM	ARI is disconnected from their role, which is to get money to support the field. They were supposed to work with senior leadership in LOBs at HQ; there is different involvement/programs at the region. LOBs at the high level in HQ are not engaged.	4
RRSPM	For ARI and RRSPM, the workload needs to continue to be focused, addressing proven areas. This allows the program to work more effectively. This should help to address the fact that ARC, ARI, and [Region] have their own unsolicited goals	2
RRSPM	We are not getting to the GA pilots; it's usually the same one coming to the safety seminars. It is a marketing problem – National doesn't understand that they can't look at a problem and solve it at the national level.	2
RRSPM	If we're going to be a data-driven program, we need to have good data. ARI does not get out and see what we are doing in the Regions.	3
RRSPM	Too many budgetary constraints. We set a budget based on getting the money in October but don't get it until February then they start taking the money back in July.	2
RRSPM	Would like to see systemic changes institutionalized	1
RRSPM	We should use the ability to fly more; don't just look out the tower and at the surface, go out and get the pilot view from the sky.	1
Division Manager	Lots of different people are involved and we don't seem to bring everyone together very well; we're unorganized. There is no accountability	4
Division Manager	National is not seen as recognizing and understanding the efforts put in at the working level, the impact the facility people really make for the program.	1
Division Manager	Need to do a better job of selling runway safety to the public. Insurance carriers require recurrent training and some even have links set up on their websites that include runway safety	3
Division Manager	Not much interaction between the LOBs, and certainly not at his level with the RRSPM's office.	3
Division Manager	Need some data collection tool similar to ASAP. Also need more ways for pilots to report runway safety issues.	4
Division Manager	Not enough resources to support the Region to the level they request	6
Division Manager	The Regional team needs more staff; the team is becoming ineffective because there aren't enough members	2

Position	Issue	Number of Instances Issue Was Identified
Division Manager	The RSAT airport selection process has been questionable and repetitive.	2
Division Manager	Should also research inexpensive ways to mark and sign smaller airports.	1
Division Manager	Each airport operator has different rules, different penalties. They should be consistent.	1
Division Manager	They need better/fresh training material. Currently they come up with their own training material.	2
Division Manager	There is no way to measure the success of the program; would like to see measurable actions taken.	1
Division Manager	There tends to be overlap in what we do and what ARI does with RSATs – it makes the airport owners wonder why so many visits are necessary. I did hear that the same airports in my region are having RSAT reviews all too frequently.	1
Division Manager	The goals set by ARI are somewhat unrealistic; we are instructed to reduce the number of incursions without considering the increase in capacity. Also need to change requirements for private pilots; they are required to do 3 take-offs and landings.	1
Division Manager	It feels like we're killing a gnat with a 200 lb hammer. We're getting redundant. We need to start getting to pilots when they are students regarding runway safety.	4
Division Manager	ARI needs to focus on it's own structure.	3
Division Manager	The Region sometimes jumps the gun on fixing things when there is no solid reason to fix it. We also may be conducting unnecessary RSATs.	2
ADO	There are probably more runway incursions occurring than are being reported. Even after runway safety became a focus, ATC may still be in the habit of working situations out directly and not reporting them.	3
ADO	There is a lack of security at many GA airports. People can just wander out onto the runway	1
ADO	Everything the RSAT team identifies creates a lot of work for the ADO.	1
ATCT	Created another hierarchy where information is more likely to be skipped.	3
ATCT	When things slow down, they tend to disappear. RRSPM's creditability is questionable. The Regional Runway Safety Team doesn't interact much with the other lines of business	3
ATCT	While national data is great, they need myopic data. This particular airport would never float to the top	4
ATCT	Keeping the interest up, we can only cry wolf about runway incursions so many times.	4
ATCT	Concerned about the new FAA Order that places the responsibility of runway safety on the facility instead of the RRSPM	1
ATCT	RSP is a political response to a media dilemma.	5
ATCT	For every program/item that pulls the workers away from operations you increase the risks.	1
ATCT	There is a poor balance of expertise on the Runway Safety teams.	2
ATCT	Some of the money needs to be bled into the field instead of it all staying at the Regional level	3
ATCT	They do not have power or funding to put behind their recommendations	2
ATCT	We are using flawed logic, e.g. "if controllers would do X, RIs would go away." Just because many airports benefit from a particular change, it doesn't mean all airports will benefit.	1
ATCT	There is support from the Airport Authority but not the Airports Organization	1
ATCT	The RRSPM needs to be given more authority when it comes to runway safety issues.	3

Position	Issue	Number of Instances Issue Was Identified
ATCT	Would like to see good groundwork by National RS Office so regions can keep focused on their particular circumstances.	1
ATCT	The Regional Runway Safety Program currently invites only hub managers to attend runway safety meetings. This is a problem because hubs are usually large airports so big airport problems are addressed.	1
ATCT	The drafts for the recommended action items are unclear and they are not sure how to respond; the completion dates imposed for these action items are usually too soon and not practical.	1
CMO/FSDO/ IFO	Need to watch quality control, inappropriate or incorrectly depicted – sign upside down, already printed 50k and distributed, say will correct next time	1
CMO/FSDO/ IFO	Pilots have too easy of a time getting out of the consequences of their actions due to the reporting system. If runway safety took a hard line on offenders, the word would get out and things would improve. They've spent a lot of money on RS initiatives, but I'm not sure it's been worth it	1
CMO/FSDO/ IFO	There is little sharing of information and making other managers aware	4
CMO/FSDO/ IFO	We could also utilize technology more to get our message out (i.e. the website).	1
CMO/FSDO/ IFO	There are a number of non-towered airports that we are currently not collecting data for.	3
CMO/FSDO/ IFO	Looking at statistics at towered airports	5
CMO/FSDO/ IFO	Runway safety has been overemphasized at times	3
CMO/FSDO/ IFO	There isn't much need for the Regional Runway Safety Team anymore; they have "lost their thunder".	1
CMO/FSDO/ IFO	Politics	5
CMO/FSDO/ IFO	There is a lack of experience on the RRSPM staff. They don't have the background to work with GA.	5
CMO/FSDO/ IFO	Lack of response on suggestions (AAI), e.g. traffic lights and rumble strips	1
CMO/FSDO/ IFO	I'm not sure if they have enough influence to get things done.	2
CMO/FSDO/ IFO	There is no FAR for GA pilots getting runway safety training.	8
CMO/FSDO/ IFO	They should institute low visibility initiatives at all times.	1
CMO/FSDO/ IFO	Unsure if we are getting return for the amount of money being spent	3
CMO/FSDO/ IFO	It has taken away from the local safety programs. ARI has made it seem like the National RSP is the only safety program even though there was already a runway safety effort established much earlier than the implementation of the National RSP.	1
CMO/FSDO/ IFO	There should be a separation of GA and Carriers.	1

Strengths of the FAA Runway Safety Program Identified by Questionnaire Respondents

Questionnaire respondents were asked to provide up to three strengths of the FAA Runway Safety Program. These responses were then placed into one of nine categories (see Table 5). Response percentages from each organization are listed in Table 5 below. Similar to responses given by interviewed managers, questionnaire respondents indicated that heightened visibility and awareness about runway incursions has been a success of the FAA Runway Safety Program. Respondents across the organizations also recognized the communication and coordination fostered by the Program. Educational and training materials developed as a result of the FAA Runway Safety Program have proven beneficial, according to questionnaire respondents. This was the strength most often acknowledged by FSDO managers (30.6%). Lastly, leadership and commitment were frequently named as strengths of the FAA Runway Safety Program. This aligns with the responses given during interviews where interviewees often identified their Regional Runway Safety Teams as committed to the Program and helpful in implementing it. For additional information regarding strengths of the FAA Runway Safety Program, please see Finding 3.

Table 5 – Questionnaire Strength Response Percentage

Strength	Airports Response Percentage	Air Traffic Response Percentage	Flight Standards Response Percentage
Heightened Visibility and Awareness	18.9	21.8	15.2
Education and Training	13.5	16.1	30.6
Communication and Coordination	16.3	25.7	18.0
Data Collection and Statistical Analysis	5.4	4.6	5.6
Leadership and Commitment	24.3	10.7	12.5
Funding	5.4	2.3	0.0
Increased Safety/Reduced Incursions	10.8	5.8	4.2
Standardization	0.0	10.3	12.5
Technological Improvements	5.4	2.7	1.4

Table 6 below provides strengths identified by each respondent along with the duty station. Please note that responses were edited when necessary to ensure anonymity.

Table 6 – Strengths of the FAA Runway Safety Program Identified by Questionnaire Respondents

Duty Station	Strength	Number of Instances Strength Was Identified
Airports	Awareness of the program is high.	3
Airports	Airport and user education	3
Airports	Collaboration among divisions	4
Airports	Coordinated interaction between LOB's	4
Airports	Statistical information	2
Airports	Airport owners understanding of problems with facility	1
Airports	Dedicated office of runway safety	2
Airports	Dedicated professionals in the LOBs	2
Airports	Focus on problems - lead to solutions	1
Airports	In ARP work plan	1
Airports	Well funded	2
Airports	Increase safety for aircraft & passengers	1
Airports	Technological Improvements	2
Airports	RSAT program	3
Airports	[Region] RSAT leader is strong, works well	3
Air Traffic	Controller reviews with higher vigilance	1
Air Traffic	Customer involvement	6
Air Traffic	General customer acceptance	6
Air Traffic	Labor involvement	1
Air Traffic	More responsive vehicle operators	1
Air Traffic	Raised awareness	43
Air Traffic	Visibility	14
Air Traffic	Changing “hot spots” on the airport	5
Air Traffic	Classroom training	8
Air Traffic	Distribution of national RS events	1
Air Traffic	Education	14
Air Traffic	Expressing the consequences of runway incursion	1
Air Traffic	Formal programs	1
Air Traffic	FSDO safety pilot programs	1
Air Traffic	Good exposure to public via website	2
Air Traffic	Good training for employees	8
Air Traffic	Improved material for distribution	4
Air Traffic	Increased knowledge	14
Air Traffic	Lessons learned	2
Air Traffic	Pilot-safety seminars/”hot-spot” brochures	5
Air Traffic	Publication of system wide reference materials	1
Air Traffic	Safety seminars	18
Air Traffic	Spotlight on airports’ woefully outdated advisory circulars.	1
Air Traffic	Training	8
Air Traffic	Ability to cross lines of business	18
Air Traffic	Better communication between pilots and controllers	18
Air Traffic	Customer interaction	6
Air Traffic	Draws on a community of resources	1

Duty Station	Strength	Number of Instances Strength Was Identified
Air Traffic	Incorporates users	6
Air Traffic	Increased coordination with other entities	18
Air Traffic	On-site visits	1
Air Traffic	Provides a new forum for AT and airport management to discuss RIs.	18
Air Traffic	Public relations	4
Air Traffic	Teamwork	4
Air Traffic	Data collection	4
Air Traffic	Identifying “hot spots”	5
Air Traffic	Agency support for the program	3
Air Traffic	Attitude, willingness to help	3
Air Traffic	Decentralized control of the program	1
Air Traffic	Follow-up	3
Air Traffic	Improved Airport Management	1
Air Traffic	Making the problem a priority issue	14
Air Traffic	Open to ideas	1
Air Traffic	Oversight	3
Air Traffic	Funding the program	7
Air Traffic	Increased safety	2
Air Traffic	Airport signs	10
Air Traffic	Continuous review of procedures	3
Air Traffic	Improved airport layouts	1
Air Traffic	Framework developed for the program	1
Air Traffic	Improved phraseology	4
Air Traffic	Improved procedures	6
Air Traffic	Methods	6
Air Traffic	Better equipment	4
Air Traffic	Memory aids	3
Air Traffic	Empowerment of RRSPM	2
Air Traffic	Facility level initiatives	1
Air Traffic	Regional Runway Safety Manager	2
Air Traffic	RSAT regional meetings and support	10
Air Traffic	The ability to streamline program to my airport	1
Flight Standards	Awareness	9
Flight Standards	Face to face with the public	2
Flight Standards	Knowledge and information program to pilots	7
Flight Standards	Airport “hot spots” publications	2
Flight Standards	Attention focused on General Aviation	1
Flight Standards	Better availability of airport diagrams	1
Flight Standards	Education	2
Flight Standards	Movement area programs	1
Flight Standards	Offers solutions	1
Flight Standards	Safety meetings	4
Flight Standards	Training	3
Flight Standards	Website	1
Flight Standards	Constant communication	7

Duty Station	Strength	Number of Instances Strength Was Identified
Flight Standards	Cooperation between lines of business	2
Flight Standards	Pilot disclosure program	1
Flight Standards	Statistical information	2
Flight Standards	FAA dedicated professionals	3
Flight Standards	Organization	1
Flight Standards	Oversight of program	3
Flight Standards	Standardized goals	3
Flight Standards	Incursions have been reduced	3
Flight Standards	Improved signage	7
Flight Standards	Establishment of regional runway incursion coordinators	1
Flight Standards	RSAT	1

Issues of the FAA Runway Safety Program Identified by Questionnaire Respondents

Questionnaire respondents were asked to provide up to three issues concerning the FAA Runway Safety Program. These responses were then placed into one of ten categories. These percentages from each organization are listed in Table 7 below. Similar to responses given by interviewed managers, questionnaire respondents indicated a lack of resources (funding, personnel, and time) is one of the main issues of the FAA Runway Safety Program. Airports and Air Traffic questionnaire respondents also indicated the lack of support from other FAA organizations, management, and external stakeholders, such as airport owners, have been issues for the Program. Managers from the Air Traffic and Flight Standards organizations also recognized the lack of training as an issue of the Program; these data support comments made by interviewees about the lack of standardization concerning runway safety training. Finally, Flight Standards managers responding to the questionnaire indicated that apathy and disinterest among stakeholders is an issue. This issue was also mentioned across organizations during interviews. For additional information regarding issues of the FAA Runway Safety Program, please see Finding 3.

Table 7 – Questionnaire Issue Response Percentage

Issue	Airports Response Percentage	Air Traffic Response Percentage	Flight Standards Response Percentage
Lack of Resources	19.5	36.3	20.0
Lack of Support	26.8	12.6	6.2
Lack of Accountability	4.9	5.0	6.2
Apathy/Disinterest	0.0	6.7	16.9
Poor Communications and Coordination	12.2	8.0	9.3
Lack of Training	4.9	11.0	21.6
Standardization	17.1	8.8	10.8
Inadequate Data Collection	12.2	4.6	3.0
Airport Complexity and Layout	0.0	2.5	3.0
Political Implications	2.4	4.2	3.0

Table 8 below provides issues identified by each respondent along with the duty station. Please note that fill-in responses were edited, when necessary, to ensure anonymity.

Table 8 – Issues of the FAA Runway Safety Program Identified by Questionnaire Respondents

Duty Station	Issue	Number of Instances Issue Was Identified
Airports	Cost	2
Airports	Resources to accomplish the program in our LOB	2
Airports	Slow to implement new airfield technology, standards, etc., to prevent V/PDs.	3
Airports	Workload for LOB team members	1
Airports	Need to focus on modernizing AT equip	3
Airports	Lack of innovation	1
Airports	Commitment by airports	1
Airports	Lack of leadership	2
Airports	NATCA's lack of professionalism regarding runway safety	2
Airports	Runway Safety Office level of engagement	2
Airports	Airports are an easy target, Flight Standards and Air Traffic have ownership too	1
Airports	Union contracts impeding implementation	2
Airports	Research on solutions not being accomplished timely	3
Airports	Communications	2
Airports	Lack of coordination	1
Airports	RSAT schedule should be fluid, as airports have issues they cannot address as needed due to set RSAT	1
Airports	Phase driver ed for ramp and airfield training	1
Airports	Lack of emphasis on improving pilot education on airport visual aids starting at student pilot level	1
Airports	Standardization	2
Airports	Non-towered locations not included (GA)	1
Airports	Introducing nonstandard signage/markings after surface incident	2
Airports	Benefits difficult to measure	1
Airports	Failure to adequately document and distribute incident investigation reports.	2
Airports	Some changes are unnecessary	1
Airports	Misunderstanding of the term	1
Air Traffic	Inadequate resources to handle an unnecessary program	4
Air Traffic	Lack of authority	3
Air Traffic	Lack of new training	2
Air Traffic	Lack of perimeter roads	1
Air Traffic	Lack of personnel to monitor	1
Air Traffic	Lack of resources (money)	4
Air Traffic	Lack of training	2
Air Traffic	Time	4
Air Traffic	Too much talk - not enough action	2
Air Traffic	Admin workload prohibits ATM involvement	2
Air Traffic	Continuance of the program	1
Air Traffic	Direction provided with associated resource support	2
Air Traffic	Increase in administrative reporting meaningless administrative actions.	2
Air Traffic	Technological improvements limited by budget restrictions	1
Air Traffic	Runway safety program ideas that increase controller workload.	1

Duty Station	Issue	Number of Instances Issue Was Identified
Air Traffic	Safety Summits are at times too short	1
Air Traffic	Lack of leadership	3
Air Traffic	Support between all lines of business	1
Air Traffic	Authority to direct	3
Air Traffic	Regional runway safety teams overstepping authority as an advisory group to direct local parties.	1
Air Traffic	Inaction, follow through	2
Air Traffic	Inconsistent national initiatives	3
Air Traffic	Empowerment of NATCA = loss of management effectiveness.	1
Air Traffic	Some inherent Air Traffic oversight is now outside of the Air Traffic organization	1
Air Traffic	Lack of accountability	1
Air Traffic	Ambiguous and conflicting procedures in FAAO 7110.65	3
Air Traffic	Controller complacency	1
Air Traffic	Misunderstanding of mission, i.e., Air Traffic is not the agency component responsible for pilot training	1
Air Traffic	Most incursions remain pilot deviations without proportional focus on pilot issues.	3
Air Traffic	PDs-huge workload for ATCT-nothing done to pilot.	3
Air Traffic	Apathy among users	1
Air Traffic	Ineffectiveness of an unnecessary program	1
Air Traffic	Communications	2
Air Traffic	Coordination issues	1
Air Traffic	Sharing of information	2
Air Traffic	Separate opinion from fact when dealing with Airport Management	1
Air Traffic	Non-air traffic experienced runway safety program managers coming up with unrealistic ideas.	3
Air Traffic	Lack of adoption of Regional successes	1
Air Traffic	RSAT meetings should be required more frequently	1
Air Traffic	Emphasis on numbers rather than allowing for cultural modification	1
Air Traffic	Inability to change AFS from status quo and implement changes	1
Air Traffic	Lack of experience	2
Air Traffic	May be too much emphasis on ATC and not as much toward pilots	3
Air Traffic	Controller performance issues	1
Air Traffic	Local pilots are not the problem. VFR pilots do not have quick access to airport diagrams.	1
Air Traffic	Will always be human error.	1
Air Traffic	Procedures	3
Air Traffic	What works at one airport, may not be the answer to another's	1
Air Traffic	Airports are not stressing development that keeps vehicles off the taxiways.	1
Air Traffic	Over regulation	3
Air Traffic	No standardization of issues	1
Air Traffic	Inflexibility - unwilling to try non-standard ideas	1
Air Traffic	No official FAA license is issued to those authorized to tow/taxi aircraft (maintenance.)	3
Air Traffic	Program needs to be adapted for complex vs. small airport	1
Air Traffic	No mandatory participation from outside	1

Duty Station	Issue	Number of Instances Issue Was Identified
Air Traffic	Wide application of inappropriate responses to facilities who do not experience runway incursions	1
Air Traffic	Too much data collection	1
Air Traffic	Wrong performance metrics	2
Air Traffic	Making an OE out of lack of pilot compliance	1
Air Traffic	Severity classification process--too lengthy	1
Air Traffic	Incorrect causal factors	1
Air Traffic	No reduction in errors	1
Air Traffic	Need to enter/cross movement areas for non-operational reasons	1
Air Traffic	Insistence on immediate results: fewer incursions	1
Air Traffic	Politically driven/numbers driven	2
Air Traffic	OEs-just exercises in paperwork-AGED workforce-no new hiring last 15 years	1
Air Traffic	Power to change	1
Air Traffic	MOU on % rule reference OE/OD's for controllers	1
Air Traffic	Operational BFOT for NATCA participants on Runway Safety Program work groups hasn't been reimbursed	4
Air Traffic	OE's and OD's take back seat	1
Flight Standards	Limited resources	2
Flight Standards	Slow pace of technology improvements	1
Flight Standards	Dumping ground for incompetent personnel	2
Flight Standards	Turf issues	2
Flight Standards	Airports that do not have RSAT	2
Flight Standards	Lack of follow up	2
Flight Standards	Not taking enforcement action	2
Flight Standards	Complacency - can't happen to me.	1
Flight Standards	Keeping the Runway Safety Program fresh so that people don't tune it out.	1
Flight Standards	Over complicating the situations and causes	1
Flight Standards	Airman participation in seminars.	1
Flight Standards	Lack of ATC observation of ground movements	1
Flight Standards	Situational awareness	1
Flight Standards	Drain of safety resources away from areas that have higher fatality rates.	2
Flight Standards	Lack of coordination between FAA counterparts	2
Flight Standards	Need to keeping teaching RI awareness at the grassroots level.	1
Flight Standards	Experience level of the pilot	2
Flight Standards	FAA training	2
Flight Standards	Inability to reach the most likely contributor	1
Flight Standards	Individual air carrier training/ integration of safety program	2
Flight Standards	Limited ground vehicle operations focus	2
Flight Standards	RSATs focus on airport management - pilot users seldom attend RSAT sessions. Pilot outreach.	2
Flight Standards	Needed focus on vehicular incursions	2
Flight Standards	We can not eliminate human error completely	1
Flight Standards	Reluctance to change AT procedures	1
Flight Standards	Non standard phraseology	2
Flight Standards	Non-standard runway/taxiway markings	2
Flight Standards	Non controlled airports	1

Duty Station	Issue	Number of Instances Issue Was Identified
Flight Standards	Root cause may still not be identified	1
Flight Standards	Need accurate reporting of incidents by ATCT's	1
Flight Standards	Continued increase in airport complexity	1
Flight Standards	Distraction of other issues	1
Flight Standards	Some initiatives seem to be ineffective	1

Appendix F – Contributory Factors of Runway Incursions Identified by Interviewees

Interviewees were asked what they perceived to be the main contributory factors to runway incursions. Table 1 below provides a complete listing of contributory factors identified by FAA managers along with position/duty station. Table 2 provides a listing of contributory factors identified by external stakeholders. Contributory factor data collected during interviews are discussed further in Finding 4.

Table 1 – Potential Contributory Factors to Runway Incursions Identified by FAA Managers

Position/ Duty Station	Potential Contributory Factor	Number of Instances Where Contributory Factor Was Identified:
RA/EXEC MGR	Airport complexity/layout	2
RA/EXEC MGR	Airport unfamiliarity	1
RA/EXEC MGR	Ego	1
RA/EXEC MGR	Human factors	3
RA/EXEC MGR	Inattention	1
RA/EXEC MGR	Lack of fencing around an airport	1
RA/EXEC MGR	Pilot error	1
RA/EXEC MGR	Situational awareness	4
RA/EXEC MGR	Unclear communications	1
RRSPM	Breaks in communication (could be pilot to controller, controller to vehicle or many other combinations)	1
RRSPM	Complacency	3
RRSPM	Coordination	1
RRSPM	Distractions	2
RRSPM	Fatigue	1
RRSPM	Head down in cockpit.	1
RRSPM	Human factors	4
RRSPM	Labor/management issues	1
RRSPM	Lack of airport familiarity by pilots	2
RRSPM	Lack of training	3
RRSPM	Level of awareness or complacency	3
RRSPM	Loss of situational awareness	5
RRSPM	Resource management	1
RRSPM	Standardization of how they do business in the tower	2
RRSPM	The prioritization of duties for pilots during surface movement	2
RRSPM	Workload	2
Division Manager	Airport layout and complexity	3
Division Manager	Airport markings and signage	6
Division Manager	Airport unfamiliarity	8
Division Manager	AT/pilot communication	12
Division Manager	Bad visibility due to weather	1

Position/ Duty Station	Potential Contributory Factor	Number of Instances Where Contributory Factor Was Identified:
Division Manager	Complacency	6
Division Manager	Controller errors seem to increase when shift change or break time	5
Division Manager	Distractions in the cockpit	1
Division Manager	Drivers are distracted	1
Division Manager	Ego (won't ask for progressive taxi instructions)	1
Division Manager	Fatigue	1
Division Manager	GA and Part 135 pilots	8
Division Manager	Human factors	4
Division Manager	Inattention	2
Division Manager	Inexperience in operating (especially GA pilots and new employees)	3
Division Manager	Lack of awareness	2
Division Manager	Lack of situational awareness	4
Division Manager	Lack of training	1
Division Manager	Need to build roads around the edge of runways	1
Division Manager	No recurrent pilot training	1
Division Manager	Not listening to ATIS	1
Division Manager	Out-of-date taxi charts	1
Division Manager	People in a hurry (rushing to do a restoration to get equipment back up and running, critical cause every minute counts)	2
Division Manager	Perimeter security to keep people and animals off the airfield	1
Division Manager	Phraseology	4
Division Manager	Pilot errors	1
Division Manager	Think it's obvious where the focus needs to be placed	1
Division Manager	Urgency to get to the ramp	1
Division Manager	Visibility issues (weather, darkness)	3
Division Manager	Workload	3
ADO	Airport design	1
ADO	Communications – pilot/controller, pilot/pilot, controller/vehicle	2
ADO	Distractions	1
ADO	Lack of education	2
ADO	Not familiar with the airport and coming in at night makes it that much more difficult	1
ADO	People are just "not thinking," not focused, these people have had the education, you can't avoid/stop those that are "daydreaming"	1
ADO	Poor perimeter security	2
ADO	Trying to legislate and/or control Human Error; people make mistakes.	1
ATCT	A lot of construction	1
ATCT	AFD – map approach using plate diagram – out of date tools	1
ATCT	Airport layout and complexity	2
ATCT	Airport unfamiliarity	6
ATCT	Communications	5
ATCT	Complacency	5
ATCT	Human factors	2
ATCT	Lack of attention	8

Position/ Duty Station	Potential Contributory Factor	Number of Instances Where Contributory Factor Was Identified:
ATCT	Lack of crew resource management	2
ATCT	Lack of training	2
ATCT	Lack of scanning or not ensuring that the runways are clear	1
ATCT	Lack of situational awareness (not maintaining awareness or lack of alertness, distraction) on the part of one or more of the following vehicle operator, pilot, pedestrian, and/or controller.	6
ATCT	Markings	1
ATCT	Pilot error	3
ATCT	Pilot workload	1
ATCT	Taxiways are closed daily	1
ATCT	Weather	1
FSDO	Airport layout and complexity (traffic load)	10
FSDO	Airport markings	6
FSDO	Airport unfamiliarity	4
FSDO	Cockpit resource management	1
FSDO	Complacency	13
FSDO	Construction	1
FSDO	Distractions in the cockpit and tower cab, inattentiveness; the pilots responsibility to know where he/she is, and know the clearances – not coming across that way sometimes	6
FSDO	Ego – afraid to ask the controller for clarification/instructions	1
FSDO	Environmental factors – weather	2
FSDO	Failure of the communication process, e.g., A command is given by a controller; the command is acknowledged by the pilot; the acknowledgement is received by the controller, but the pilot doesn't get confirmation of what was heard by the controller. The pilot needs that confirmation	11
FSDO	Fatigue	5
FSDO	GA pilots	1
FSDO	Human factors	6
FSDO	Inexperienced pilots	3
FSDO	Lack of concentration	1
FSDO	Lack of situational awareness	5
FSDO	Lack of training	4
FSDO	Lack of trust between controllers & pilots	4
FSDO	Mainly pilot oversight and occasionally controller error	2
FSDO	Not following procedures	2
FSDO	Operational factors	1
FSDO	Phraseology	4
FSDO	Pilot workload	4
FSDO	The contributory factors have been identified through the RIIEP questions	1
FSDO	The economy may lead to a less than safe course of action. E.g., It is safer to cross near the ends of the runway vice in the middle, but going to the end takes longer, and therefore costs more	1
FSDO	Vehicle drivers on ground inexperienced	1

Table 2 – Potential Contributory Factors to Runway Incursions Identified by External Stakeholders

Potential Contributory Factor
Communication between GA operators and controllers (e.g., the pilot giving a “read back,” then doing something else)
Communication challenges with foreign carriers
Complacency
Complexity and design flaws of airports
Complexity and design flaws of airspace
Confusion over phraseology
Congestion at airports
Contrast problems with respect to pavement markings
Difference in training GA pilots receive versus commercial pilots
Differences in training among GA pilots
Distractions in the cockpit
Ignorance of proper procedure
Lack of or deficient signage
Median age of GA pilots currently 50+ - their training was different than current training
Not reaching much of the GA population with training opportunities or material (e.g. Pilot Meetings)
Pilots’ fear of asking controllers for help, especially for progressive taxi instructions
Situational awareness of pilots
Training of ground workers such as mechanics and fire/police workers
Visibility limitations (darkness, weather)

Appendix G - Acronyms

AAAE	American Association of Airport Executives
AAF	Airway Facilities Service
AAL	Alaskan Region
AAS	Office of Airport Safety and Standards
AAT	Air Traffic Service
ACE	Central Region
ACM	NAS Configuration Management and Evaluation Staff
ACM-10	Program Evaluation Branch
ADO	Airport District Office
AEA	Eastern Region
ASDE	Airport Surface Detection Equipment
AFS	Flight Standards Service
AGL	Great Lakes Region
AIP	Airport Improvement Program
ALPA	Airline Pilots Association
ANE	New England Region
ANI	National Airspace System Implementation Program
ANM	Northwest Mountain Region
AOPA	Aircraft Owners & Pilots Association
ARI	Office of Runway Safety
ARP	Associate Administrator for Airports
ASAP	Aviation Safety Action Program
ASO	Southern Region
ASW	Southwest Region
AT	Air Traffic
ATA	Air Transport Association
ATCT	Air Traffic Control Tower
ATP	Air Traffic Planning and Procedures Program
ATP-100	En Route/Terminal Procedures
ATS	Associate Administrator for Air Traffic Services
ATX	Air Traffic Resource Management Program
AWP	Western-Pacific Region
CAA	Civil Aviation Authority
CD-ROM	Compact Disk – Read Only Memory
CMO	Certificate Management Office
DOT	Department of Transportation
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
FS	Flight Standards
FSDO	Flight Standards District Office
GA	General Aviation

GPRA	Government Performance and Results Act
HQ	Headquarters
IFO	International Field Office
LOB	Line of Business
NAFI	National Association of Flight Instructors
NAS	National Airspace System
NATCA	National Air Traffic Controller Association
OD	Operational Deviation
OE	Operational Error
OS	Operations Supervisor
PD	Pilot Deviation
POC	Point of Contact
PPS	Precise Positioning Service
QAT	Quality Action Team
RA	Regional Administrator
RAA	Regional Airline Association
R&D	Research & Development
RI	Runway Incursion
RIAT	Runway Incursion Action Team
RIIEP	Runway Incursion Information and Evaluation Program
RRSPM	Regional Runway Safety Program Manager
RS	Runway Safety
RSAT	Runway Safety Action Team
RSPM	Regional Safety Program Manager
RSR	Runway Safety Representative
RST	Runway Safety Team
SI	Surface Incident
SIPT	Safety Integrated Product Team
SMGCS	Surface Movement Guidance and Control System
SOP	Standard Operating Procedure
SPM	Safety Program Manager
V/PD	Vehicle/Pedestrian Deviation

Appendix H - Glossary

2000 - National Runway Safety Blueprint	The first edition of the Runway Safety Blueprint, published in 2000, presented the FAA's corporate approach to reducing runway incursions.
2002-2004 Runway Safety Blueprint	Defines the FAA's strategy and prioritizes efforts to reduce runway incursions. It presents the current state of runway safety at towered airports and identifies those areas where improvement is needed. An update to the *2000 National Runway Safety Blueprint*, the latest version is presents an overview of the accomplishments in Fiscal Year 2001 and defines the objectives to be achieved in 2002-2004. It summarizes the nearly 50 activities carried out during the past year that relate to Runway Safety's overarching goals and supporting objectives.
Air Transport Association (ATA)	The purpose of the ATA is to support and assist its members – U.S. airlines – by promoting the air transport industry through safety and cost effectiveness, pursuing technological advancement of its operations; advocating common industry positions before state and local governments; conducting designated industry-wide programs; and assuring governmental and public understanding of all aspects of air transport.
Aircraft Owners and Pilots Association (AOPA)	An aviation association that provides representation to private aircraft owners and pilots at the federal, state, and local levels. AOPA also provides legal services, advice, and other assistance to its members.
Airline Pilots Association (ALPA)	The Airline Pilots Association is a union representing 66,000 airline pilots at 42 U.S. and Canadian airlines. Founded in 1931, it is chartered by the AFL-CIO. ALPA provides all of the traditional union representation services for its members. This includes the lobbying of airline pilot views to Congress and government agencies.
Airport District Office (ADO)	An FAA field office that is the first line of contact for managers of the airports within their district. Some of its responsibilities include administering funds for airport improvements and handling complaints regarding airport operations.
Airport Improvement Program (AIP)	The Airport Improvement Program assists the development of a nationwide system of public-use airports by providing funding for airport planning and development projects at airports included in the National Plan of Integrated Airport Systems. It also provides funding for noise compatibility planning and noise compatibility programs established by the Aviation Safety and Noise Abatement Act of 1979.
American Association of Airport Executives (AAAE)	The American Association of Airport Executives is the largest professional organization for airport executives in the world, representing thousands of airport management personnel at public use airports nationwide. AAAE's primary goal is to assist airport executives in fulfilling their responsibilities to the airports and communities they serve.

Aviation Safety Action Program (ASAP)	The objective of ASAP is to enhance aviation safety through the prevention of accidents and incidents. Its focus is to encourage voluntary reporting of safety issues and events that come to the attention of employees of certain certificate holders. To encourage an employee to voluntarily report safety issues even though they may involve an alleged violation of Title 14 of the Code of Federal Regulations (14 CFR), enforcement-related incentives have been designed into the program. ASAP is based on a safety partnership between the Federal Aviation Administration and the certificate holder and may include any third party such as the employee's labor organization.
Certificate Management Office (CMO)	A Certificate Management Office is a field office that is responsible for certification of a specific airline. Inspectors within the CMO are responsible for conducting airmen certifications and air carrier certifications for the airline.
Federal Aviation Regulations (FAR)	Federal Aviation Regulations requires that structures critical to the safe operation of an aircraft must not fail within their expected lifetimes due to damage caused by the repeated loads typical to its operations.
Part 121	Federal Aviation Regulation, *Part 121*, specifies requirements for domestic commercial aircraft operations
Part 129	Federal Aviation Regulation, *Part 129*, specifies requirements applicable to foreign operators of or commercial aircraft
Part 139	Federal Aviation Regulation, *Part 139*, specifies requirements for the conduct of airport operations
Flight Standards District Office (FSDO)	A Flight Standards District Office is an FAA field office that is responsible for the certification and operation of air carrier and general aviation aircraft. Some of its responsibilities include certification of airmen and accident investigation.
Government Performance and Results Act (GPRA)	The Government Performance and Results Act seeks to make the federal government more accountable to the American people for the tax dollars it spends and the results it achieves. GPRA has three main components: strategic plans, annual performance plans, and annual performance reports.
Horizontal Integration	The coordination required between runway safety stakeholders and their counterparts in other lines of business to reduce the risk of runway incursions.
International Field Office (IFO)	An International Field Office is an FAA field office that is responsible for the certification and operations of foreign air carriers in the United States. Some of its responsibilities include safety inspections and certification of airmen.
National Association of Flight Instructors (NAFI)	The National Association of Flight Instructors is an international organization whose members include all flight instructors and student pilots.

Office of Runway Safety (ARI)	The Office of Runway Safety is responsible for working with other FAA organizations and the aviation community to implement initiatives that increase runway safety.
Operational Error (OE)	An action taken by an air traffic controller that causes a loss of separation as defined in FAA Order 7210.56A. An operational error results in one of the following: less than the applicable separation minimum between two or more aircraft or between an aircraft and terrain or obstacles, as required by FAA Order 7110.65, air traffic control, and supplemental instructions. Obstacles include vehicles/equipment/personnel on runways or an aircraft landing or departing on a runway closed to aircraft operations after receiving air traffic authorization.
Pilot Deviation (PD)	An action taken by a pilot that results in violation of Title 14 of the Code of Federal Regulations.
Regional Airline Association (RAA)	The Regional Airline Association represents the U.S. regional airlines and the suppliers of products and services that support the industry, before the U.S. Congress, FAA, Department of Transportation, and other federal and state agencies. RAA was chartered to promote a healthy business climate and to work with regulatory agencies and other organizations, including the traveling public, with the objective of achieving safety, efficiency, and growth in regional airlines.
Regional Runway Safety Plan	Each region develops a Regional Runway Safety Plan that identifies the initiatives that the region will pursue to improve runway safety.
Regional Runway Safety Program Manager (RRSPM)	The Regional Runway Safety Program Manager coordinates the runway safety program within their region.
Regional Safety Program Manager (RSPM)	The Regional Safety Program Manager, a member of the Flight Standards organization, coordinates the overall safety program within their region.
Runway Incursion	The FAA defines a runway incursion as "any occurrence at an airport involving an aircraft, vehicle, person, or object on the ground that creates a collision hazard or results in a loss of separation with an aircraft taking off, intending to take off, landing, or intending to land."
Runway Incursion Information and Evaluation Program (RIIEP)	A one-year program established by the FAA Administrator to gather information from airmen who are involved in runway incursions and to evaluate that information to determine the root causes of such events. Program documentation describes the FAA's policy concerning enforcement-related incentives offered to airmen to encourage them to participate in the program and the use of the information for enforcement purposes. Effective date of the program was March 17, 2000 through March 19, 2001.

Runway Safety Action Plan	The Runway Safety Action Team develops Runway Safety Action Plans for each airport with an operational FAA Airport Traffic Control Tower or a Federal Contract Tower. The plan includes runway safety issues and problems at the airport, and specific action items for activities designed to improve runway safety.
Runway Safety Action Team (RSAT)	The Runway Safety Action Team is established at either the regional or local level to address existing or potential runway safety problems and issues. The RSAT is responsible for developing a Runway Safety Action Plan for a specific airport.
Runway Safety Order 7050.1	The order established procedures and assigned responsibilities for the FAA's Runway Safety Program. The Runway Safety Program is intended to reduce the collision risks associated with runway incursions and surface incidents involving the runway environment.
Runway Safety Program	The sum of all runway safety efforts and organizations, at all levels, under the leadership of the Office of Runway Safety.
Safety Program Manager	The Safety Program Manager, a Flight Standards employee, promulgates initiatives proposed by the Regional Safety Program Manager at the facility level.
Surface Incident	The FAA defines a surface incident as "an event during which unauthorized or unapproved movement occurs within the movement area or an occurrence in the movement area associated with the operation of an aircraft that affects or could affect the safety of flight"
Vehicle/Pedestrian Deviation (V/PD)	An entry or movement on the airport movement area by a vehicle (including an aircraft operated by a non-pilot) or a pedestrian that has not been authorized by air traffic control.